

# Protection Convergence

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# Protection Convergence

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Corresponding author\*  
E-mail: poshop99@naver.com

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## The Effect of Core Job Characteristics on the PROTECTION of Medical Skincare Workers on the Organizational Effectiveness: With a Focus on the Mediating Effect of Self-Efficacy

Jieun Jang<sup>1</sup>

Seokyeong University, Seoul, Republic of Korea

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

Seokyeong University, Seoul, Republic of Korea

### Abstract

**Purpose:** This study sought to examine the effect of core job characteristics, which is a concept related to the protection of medical skincare workers, on the organizational effectiveness with a focus on the mediating effect of self-efficacy. The aim is to help facilitate the development of the beauty service industry by promoting the achievement of organizational goals by securing professional manpower with job performance skills and by elevating the quality of the customer satisfaction services.

**Method:** In this study, 405 copies of the online questionnaires for the medical skincare workers serving at skincare rooms and plastic surgery clinics by utilizing the IBM SPSS Statistics 25 program. To validate the effect of the core job characteristics of medical skincare workers on the organizational effectiveness by mediating self-efficacy, a 3 phased hierarchical multiple regression analysis was performed following the validation procedures of the mediating effect proposed by Baron & Kenny(1986) and the Sobel test was conducted to validate the mediating effect.

**Results:** As a result of carrying out a 3 phased hierarchical multiple regression analysis in this study, in the first phase, among the sub-factors of the core job characteristics, which are the independent variables, job importance, feedback, job diversity, and autonomy, excluding job identity, were found to have sequentially impacted positively on the parameter of self-efficacy. In the second phase, among the sub-factors of the core job characteristics, which are the independent variables, autonomy, feedback, and job importance were found to have sequentially impacted positively on the dependent variable of organizational effectiveness. Lastly, the parameter self-efficacy and the independent variables of autonomy and feedback were found to have a positive effect on the organizational effectiveness. In the result of the Sobel test additionally conducted to validate the mediating effect, it was found that self-efficacy plays a mediating role in the relationship where job importance and feedback are impacting the organizational effectiveness.

**Conclusion:** Based on the result of this study, it was validated that the job importance and feedback of the medical skincare workers increase the self-efficacy, and the increased self-efficacy in turn increases the organizational effectiveness. Hence, if self-efficacy is increased by providing feedback through education and a systematic inspection of their job with supervisors and colleagues for the perception of the importance of job for the members of organization, it will not only bring a positive effect on the performance of the organization, but also protect the employees, thereby promoting the achievement of organizational goals via efficient manpower management.

**[Keywords]** Medical Skincare, Core Job Characteristics, Self-Efficacy, Organizational Effectiveness, Job Importance

## 1. Introduction

Unlike the past, in the modern society, the craving for beauty and health has incrementally grown following the increase in the level of income due to vigorous economic activities and the proactive economic activities of women, and changes have also begun to take place across the fields of beauty and hospitals. The increased national income and single-person households, changes in the consumption patterns, and the idea of pursuing young looks and the individuality of modern people would have largely driven the growth of the beauty and hospital industries. For such reasons, Korea's position in the beauty and medical industries is being recognized[1], and as the consumers' interest in skincare has recently risen, the skin market has also expanded[2]. According to the National Statistical Office's national data surveyed on the businesses in operation, the number of those in the skincare industry has consistently grown from 10,181 in 2008 to 15,618 in 2014, and the number of employees has also grown from 18,622 to 25,486, respectively. The number of businesses and employees in the skincare industry is consistently rising each year, and the demand of the customers seeking skincare will likely continuously increase moving forward[3]. Due to which, the perception of more specialized fields of skincare such as oriental medicine and obesity management as well as skin and plastic surgery has surfaced, and for the effective management of problematic skin, the need has begun to be perceived for medical skincare, which is a skincare performed at hospitals, rather than at personal care rooms[4].

If the general skin care would mean an aesthetic management to help keep a healthy skin even more beautiful, medical skincare has the purpose of treating problematic skin on top of the concept of the general skin care[5]. Medical skincare in the early stages of introduction began as a concept to help minimize skin diseases and side effects after surgeries. However, after the separation of prescribing and dispensing drugs, the medical and beauty industries have developed to fuel the growth of the medical science via various laser treatments for the skin regeneration and recovery along with follow-up management, thereby expanding towards a concept of including making best efforts for the skincare on an even more proactive basis[6]. Furthermore, as the development and distribution of advanced medical equipments including laser treatment and lifting management are rapidly spreading across Korea, and as the number of people pursuing healthy and beautiful skin is also steeply increasing, medical skincare is rooting down as the mainstream of the general skincare[7].

Therefore, as the education and fostering of the professional manpower to satisfy the customers in medical skincare are emerging as essential tasks in the field of skincare, the role of medical skincare estheticians as professional manpower for the provision of highly satisfactory services provision is crucial as they need to be subdivided without exception[8]. While there exist institutional limitations in the scope and qualifications of the legal areas of work for the estheticians, they are in fact growing as they are recognized as experts in the field of medical skincare along with medical professionals[9]. As such, the beauty industry is a very critical field in which the specialization of human resources is very important, and unlike other industries, the importance of skilled technology and service satisfaction of the medical skincare workers is highly labor intensive[10]. Moreover, to secure the differentiation and competitiveness of the hospitals in a ferociously competitive environment, the importance of human resources management is incrementally growing as the achievement of organizational goals is pursued based on securing competent human resources[11][12]. Most important for fostering talents is the attitude towards one's job and organization[13]. Therefore, the management of manpower at the hospitals is very important since the behaviors of the workers related to the psychological state of individuals causes an important effect on the work performance results of the organization[14].

Examining the recent previous studies, while the empirical studies on the effect of the personal environmental congeniality of the beauticians on the job satisfaction and the intention to change job[10], the effect of the organizational effectiveness of beauty industry workers on the stagnant types of career and job attitude[15], and the effect of the job characteristics of workers on the organizational effectiveness[16] have been carried out, there is a lack of the studies on the effect of individual workers' core job characteristics on the organizational effectiveness with a focus on the mediating effect of self-efficacy on the protection of the medical skincare workers. Furthermore, given the nature of the beauty service industry, a high reliance is placed on the human resources, and hence, it

impacts the achievement of organizational goals according to individual self-efficacy. Therefore, protecting employees and securing manpower via efficient human resources management by the members of organization will not only enhance the customer satisfaction, but also protect employees and bring a positive effect on the achievement of organizational goals. Accordingly, in this study, it is intended that, by examining the effect of the workers' core job characteristics on the organizational effectiveness with a focus on the self-efficacy mediating effect of medical skincare workers, the relationship between the core job characteristics and the organizational effectiveness may be clarified through the self-efficacy of medical skincare workers, thereby providing basic data for the development of the medical skincare industry.

## **2. Research Method**

### **2.1. Subject of research**

To analyze the effect of the core job characteristics of employees on the organizational effectiveness on the protection of medical skincare workers, in this study, online survey questionnaires and consent forms were distributed to and collected from the workers serving at skincare rooms and plastic surgery clinics from April 2, 2021 until April 30, 2021, while 405 copies excluding incomplete 15 copies were selected and analyzed.

### **2.2. Method of survey**

In this study, an online survey questionnaire was used as a research tool to analyze research problems, and the questionnaire was consisted of 10 questions on general characteristics, 18 questions on core job characteristics[16], 8 questions on self-efficacy[17], and 10 questions on organizational effectiveness[18], for a total of 46 questions, for which a 5-point Likert scale and self-entry method were used.

### **2.3. Issue of research**

H1, core job characteristics will have a significant, positive(+) effect on the organizational effectiveness.

H2, core job characteristics will have a significant, positive(+) effect on the self-efficacy.

H3, In the relationship where core job characteristics having effect on the organizational effectiveness, there will be a mediating effect of the self-efficacy.

### **2.4. Data handling method**

The data of this study were statistically analyzed by using the IBM SPSS Statistics 25 program, undergoing the following procedures.

First, the Exploratory Factor Analysis was performed to validate the validity and reliability of the measurement tool, and the reliability of the items forming the factor was analyzed by using the Cronbach's alpha coefficient.

Second, to identify and understand the general characteristics of the subjects of research, the frequency analysis was performed.

Third, the mean and standard deviation were calculated to identify and understand the descriptive statistics of key variables, and normality was tested based on the skewness and kurtosis.

Fourth, the Pearson's correlation analysis method was performed to identify and understand the correlation between key variables.

Fifth, to validate the mediating effect of self-efficacy in the relationship between core job characteristics and organizational effectiveness, a 3 phased hierarchical multiple regression analysis proposed by Baron & Kenny(1986) was performed and validated through the Sobel test.

In the statistical analysis above, the statistical significance was determined based on 5% for the level of significance.

### 3. Research Result

#### 3.1. Validation of reliability and validity

To validate the validity of the measurement tool utilized for this study, the exploratory factor analysis was performed. Among the methods of factor analysis, the principal component analysis was used to minimize the information loss while extracting the factors which explain the most among the dispersions of the original variables to the extent possible. Analysis was also performed by using the varimax rotation, which rotates the factors until the factor's structure becomes most apparent. As for the factor classification, it was classified as a factor when the factor loading exceeded 0.5, and the core job characteristics were classified as the 5 factors of "autonomy," "job diversity," "job importance," "feedback," and "task identity." A total of 18 items were analyzed without any excluded questions, and as for the analytical result, the KMO measure was .874, and the Bartlett's sphericity test result also turned out to be significant  $<p<.001>$ , and hence, the factor analytical model was determined to be appropriate. Self-efficacy was analyzed as a single factor without any excluded items for a total of 8 questions, and as for the analytical result, the KMO measurement turned out to be .902, and the result of the Bartlett's sphericity test also turned out to be significant.  $<p<.001>$

Organizational effectiveness is consisted of the 2 factors of "job satisfaction" and "intention to change job," and a total of 10 questions were derived without any excluded questions. As for the analytical result, the KMO measurement turned out to be .868, and the result of the Bartlett's sphericity test also turned out to be significant.  $<p<.001>$

Following which, as a result of performing the reliability analysis by using the Cronbach's alpha coefficient, the reliability coefficient for all variables turned out to be 0.7 or higher, indicating good reliability.

#### 3.2. Descriptive statistical analysis

To examine the extent of the research variables measured in this study, as illustrated in <Table 1>, to determine whether the assumption of normality is satisfied along with the mean and standard deviation, skewness and kurtosis were calculated. If both skewness and kurtosis do not exceed the absolute value of 2, it is determined that they approximate a normal distribution, and it turned out that all variables satisfy the assumption of normality.

**Table 1.** Descriptive statistics of major variables.

Variable	N	Minimum	Maximum	M	SD	Skewness	Kurtosis
Job diversity	405	1.00	5.00	3.71	0.74	-0.48	0.28
Task identity	405	1.67	5.00	3.90	0.76	-0.37	-0.47
Job importance	405	2.00	5.00	3.90	0.68	-0.37	-0.20
Autonomy	405	1.25	5.00	3.59	0.76	-0.23	-0.25
Feedback	405	1.00	5.00	3.65	0.77	-0.54	0.40

Self-efficacy	405	1.63	5.00	3.84	0.61	-0.38	-0.06
Organizational effectiveness	405	1.40	5.00	3.29	0.64	0.12	-0.06

### 3.3. Correlation analysis

The Pearson's Correlation Analysis was performed to determine the relationship between key variables. As a result of the analysis, it turned out that there was a significant, positive(+) correlation between all variables, as illustrated in <Table 2> below.

**Table 2.** Correlation analysis.

Variable	1	2	3	4	5	6	7
1. Job diversity	1						
2. Task identity	.382***	1					
3. Job importance	.426***	.534***	1				
4. Autonomy	.298***	.524***	.465***	1			
5. Feedback	.288***	.132**	.254***	.208***	1		
6. Self-efficacy	.349***	.348***	.448***	.340***	.284***	1	
7. Organizational effectiveness	.196***	.207***	.301***	.338***	.299***	.388***	1

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

### 3.4. The effect of core job characteristics on the organizational effectiveness by mediating self-efficacy

#### 3.4.1. Multiple regression analysis

To validate the effect of core job characteristics on the organizational effectiveness by mediating self-efficacy, a 3 phased hierarchical multiple regression analysis was performed, as illustrated in <Table 3> and <Figure 1> below.

As a result of validating the effect of the independent variable of core job characteristics on the parameter of self-efficacy in Phase 1, it turned out that job importance( $\beta = .260$ ,  $p < .001$ ), feedback( $\beta = .147$ ,  $p < .01$ ), job diversity( $\beta = .132$ ,  $p < .01$ ), and autonomy( $\beta = .105$ ,  $p < .05$ ), which are the sub-factors of core job characteristics, have sequentially had a significant, positive(+) effect on the self-efficacy.

Following which, as a result of validating the effect of the independent variable of core job characteristics on the dependent variable of organizational effectiveness in Phase 2, it turned out that autonomy( $\beta = .237$ ,  $p < .001$ ), feedback( $\beta = .213$ ,  $p < .001$ ), and job importance( $\beta = .146$ ,  $p < .05$ ), which are the sub-factors of core job characteristics, have sequentially had a significant, positive(+) effect on the organizational effectiveness.

Lastly, as a result of validating the effect of the independent variable of core job characteristics and the parameter of self-efficacy on the dependent variable of organizational effectiveness, the

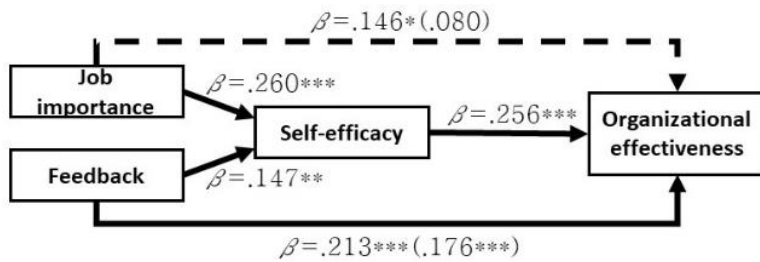
parameter of self-efficacy( $\beta=.256$ ,  $p<.001$ ) and the independent variable of autonomy( $\beta=.210$ ,  $p<.001$ ) and feedback( $\beta=.176$ ,  $p<.001$ ) turned out to have a significant, positive(+) effect on the organizational effectiveness. In Phase 3, the standardized regression coefficient( $\beta$ ) of autonomy and feedback declined relative to those in Phase 2, and the influence on the organizational effectiveness is still significant, and hence, it may be said that self-efficacy partially mediates the relationship on which autonomy and feedback among the core job characteristics have effect on the organizational effectiveness, and job importance, which demonstrated a significant effect in Phase 2, was not significant in Phase 3, and hence, self-efficacy may be said to completely mediate the relationship between job importance and organizational effectiveness.

**Table 3.** Effect of core job characteristics on organizational validity by mediating self-efficacy.

Stage	Independent variable	<i>B</i>	<i>S.E</i>	$\beta$	<i>t</i>	<i>p</i>	<i>F</i> ( <i>R</i> <sup>2</sup> )
1 (independent→ mediated)	Job diversity	0.109	.041	.132	2.677**	.008	29.432*** (.269)
	Task identity	0.069	.045	.084	1.525	.128	
	Job importance	0.236	.050	.260	4.755***	<.001	
	Autonomy	0.084	.042	.105	2.002*	.046	
	Feedback	0.117	.036	.147	3.227**	.001	
2 (independent→ dependent)	Job diversity	0.010	.045	.012	0.228	.820	18.051*** (.184)
	Task identity	-0.023	.050	-.027	-0.467	.641	
	Job importance	0.138	.055	.146	2.528*	.012	
	Autonomy	0.198	.046	.237	4.276***	<.001	
	Feedback	0.178	.040	.213	4.439***	<.001	
3 (independent+ mediated→ dependent)	Job diversity	-0.019	.044	-.022	-0.429	.668	20.073*** (.232)
	Task identity	-0.041	.048	-.049	-0.859	.391	
	Job importance	0.075	.055	.080	1.378	.169	
	Autonomy	0.176	.045	.210	3.883***	<.001	
	Feedback	0.146	.039	.176	3.716***	<.001	
	Self-efficacy	0.66	.054	.256	4.980***	<.001	

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

**Figure 1.** Mediating effects of self-efficacy.



### 3.4.2. Validation of mediating effect

In the result of the Sobel test which was additionally conducted to validate the mediating effect above, self-interest turned out to be playing the mediating role in the relationship where job importance ( $Z=3.345$ ,  $p<.001$ ) and feedback ( $Z=2.681$ ,  $p<.01$ ) have effect on the organizational effectiveness, and consequently, it was validated that job importance and feedback increase the self-efficacy, and the increased self-efficacy in turn increase the organizational effectiveness, as illustrated in <Table 4> below.

**Table 4.** Sobel test results.

Variable	Z	p
Job diversity	2.318*	.020
Task identity	1.458	.145
Job importance	3.345***	<.001
Autonomy	1.843	.065
Feedback	2.681**	.007

## 4. Conclusion

A summary and discussion of the results of this study are as follows. As a result of performing the 3 phased hierarchical multiple regression analysis, first, among the sub-factors of the core job characteristics, which are independent variables, in Phase 1, job importance ( $\beta=.260$ ,  $p<.001$ ), feedback ( $\beta=.147$ ,  $p<.01$ ), job diversity ( $\beta=.132$ ,  $p<.01$ ), and autonomy ( $\beta=.105$ ,  $p<.05$ ) turned out to sequentially have a positive effect on the parameter of self-efficacy except for the task stagnation. This is a result which resembles the previous studies on the effect of job characteristics of hotel companies on the self-efficacy [19], the effect of job autonomy characteristics of hotel companies on the job satisfaction and organizational immersion : an adjusted mediating effect of self-efficacy [20], and the effect of the job characteristics of coast guard on the self-efficacy [21]. That is, job importance, job diversity, feedback, and autonomy increase the self-efficacy, which is a personal belief and confidence in one's ability to perform a job under various circumstances.

Second, among the sub-factors of core job characteristics, which are independent variables, in Phase 2, autonomy ( $\beta=.237$ ,  $p<.001$ ), feedback ( $\beta=.213$ ,  $p<.001$ ), and job importance ( $\beta=.146$ ,  $p<.05$ ) turned out to sequentially have a positive effect on the dependent variable of organizational effectiveness. This is a result supportive of the previous studies on the relationship between job characteristics and job immersion and self-efficacy of domestic corporate workers [22], and the analysis of the effect of the organizational culture and job characteristics on the organizational effectiveness [23]. That is, this means that, autonomy for job performance such as the discretion to

determine job of medical skincare workers, right to decide handling business, and the right to make decision, is large, and positive feedback activities are in progress among the supervisors or colleagues. The greater the confidence in one's job importance, the greater the job satisfaction, while the rate of turnover declines, and efforts are made to achieve organizational goals.

Third, among the sub-factors of core job characteristics, which are independent variables, only job importance( $Z=3.345$ ,  $p<.001$ ) and feedback( $Z=2.681$ ,  $p<.01$ ) turned out to have a positive effect on the organizational effectiveness through the mediating effect of self-efficacy. was shown to have a positive effect. Such a result is supportive of the previous studies performed on the effect of the self-efficacy and job satisfaction by factors of the workers at social welfare facilities on the overall job satisfaction[24], and the effect of self-leadership and self-efficacy of the nurses on the organizational effectiveness and organized civic actions[25]. Therefore, based on such results, it turned out that protection is provided for the employees to not only keep their psychological and mental state in a stable manner, but also to have a positive effect on the organizational effectiveness through self-efficacy, which is increased by the recognition of job importance and positive feedback activities of the medical skincare workers. If educational activities which can help recognize the importance of individual's work can be regularly conducted, and engage organizational members, one would be able to protect oneself by forming beliefs and trust in the importance of one's job. Furthermore, since the purpose of colleague's evaluation is to provide meaningful and actionable feedback, it promotes the growth of results, and supervisors professionally evaluate the results of work to help individuals acquire competency, and hence, it may be said to be an essential source of performance improvement[26]. Gathering these together, a systematic inspection of job activities with colleagues or supervisors and prompt and positive feedback activities help increase the self-efficacy, a concept which helps protect oneself with confidence and belief in oneself, and the increased self-efficacy in turn increases the job satisfaction and reduces the rate of turnover, and hence, it is determined to have a positive effect on the achievement of organizational goals.

Gathering the above results and discussions, a number of proposals can be made. There is a lack of previous studies related to the core job characteristics, organizational effectiveness, and self-efficacy of the occupations related to the beauty service industry, which is the subject of this study. Therefore, since various considerations of the thesis topic have not been made, continuous studies will be needed. Furthermore, as a sub-factor of the organizational effectiveness, which is a dependent variable, job satisfaction and intention to change job were analyzed as the two factors only. However, it will be necessary to include more detailed factors in the future studies. Through this study, it was confirmed that through the self-efficacy increased by the belief in job importance and positive feedback activities by medical skincare workers, one can stably protect one's psychological and mental state, while having a positive effect on the achievement of organizational goals. Based on which, it is hoped that detailed factors of each individual's job characteristics will be explored concerning the enhanced self-efficacy, and that they will develop into more in-depth studies.

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## 6. Appendix

### 6.1. Authors contribution

	Initial name	Contribution
Lead Author	JJ	<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> </ul>
Corresponding Author*	EK	<ul style="list-style-type: none"> <li>-Play a decisive role in modification <input checked="" type="checkbox"/></li> <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>

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Corresponding author\*  
E-mail: jaebumlee@mju.ac.kr

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## A Qualitative Study on Changes in Women's Perception of Beauty Care After COVID-19

Hajeong Lee<sup>1</sup>

Myongji University, Seoul, Republic of Korea

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

Myongji University, Seoul, Republic of Korea

Hyunwoo Kim<sup>3</sup>

Dongbang Culture University, Seoul, Republic of Korea

### Abstract

**Purpose:** This study was conducted by using a phenomenological approach among the qualitative research methods, which is an inductive narrative method, with a view to examine in greater depth as to what changes are taking place in the women's perception of beauty care after COVID-19.

**Method:** As for the research participants, 8 women who are serving in the beauty and health related industry in Korea were selected via the purposive sampling method. As for the data analysis of the in-depth interview contents, the 4-step phenomenological analytical method proposed by Giorgi was used, and to secure the validity of the study, the 8 evaluation criteria of the phenomenological research proposed by Cresswell for the validity strategy of the qualitative study were applied mutatis mutandis. Furthermore, to secure the reliability of the study, the truth value, applicability, consistency, and neutrality proposed by Guba and Lincoln were applied.

**Results:** Results of the study, 113 semantic units, 20 sub-components, and 6 elements were eventually derived. The contents of the components were identified to be the changes in the perception of information search, changes in the interest of beauty, positive perception of evaluation according to wearing a mask, negative perception of evaluation according to wearing a mask, observation of other people's appearance management and information exchange, and the changes in the interpersonal perception.

**Conclusion:** Based on the results of this study, it was verified that the Korean women's perception of beauty care has changed, and that it is transforming into the beauty behaviors for the rational consumption according to the situation due to the social disaster of the COVID-19. It is expected that such research results will be used as the behavioral scientific data on the changes in the women's beauty care in the future era of infectious diseases.

**[Keywords]** COVID-19, Women, Experience, Perception, Beauty Care

## 1. Introduction

Due to COVID-19, the perception of personal hygiene including health care has recently strengthened, and many industries are expanding digitally and contactlessly at an exponential rate. Moreover, the hyperconnectivity and superintelligence caused by the fourth industrial revolution are leading innovative changes via the convergence with new technologies across various fields. The healthcare paradigm has already shifted from the treatment centric to the 4P centric such as the "preventive," "predictive," "personalized," and "participatory" as income increased and interest in the health and quality of life improvement has grown as a matter of phenomenon[1][2].

Accordingly, the beauty care market is seeing the emergence of a series of products which enhance the customers' experience and satisfaction given the advent of advanced AI technologies and new devices. In particular, the augmented reality(AR) and virtual reality(VR) technologies are elevating the scalability and convenience of the beauty market, and since the related

contents continue to increase the consumer satisfaction, the trends of the beauty market are achieving great transformations[3][4].

Perception of the beauty care perception refers to the act of knowing objects clearly, and correctly understanding and discriminating their meaning, and in the realm of psychology, it refers to the conscious action ranging from the senses and perceptions of sensing objects to the memories and thoughts which discriminate and determine them[5]. In addition, perception may also be said to be an act by which the thinking subject interacts with the external, the object of thought, to acquire knowledge. That is, in this study, the perception of beauty care refers to the perception of behaviors related to the beauty care, which is used as a means of making others aware of oneself, such as by expressing oneself in order to make appearance beautiful.

The beauty care behavior may be defined as a collective term for the expanded management methods aimed at healthy beauty by using the beauty care systems or by using the beauty care equipment, including those performed directly on the body to improve and nurture one's image beautifully. That is, a slightly different concept from appearance management may be interpreted. Appearance is a comprehensive concept which includes the face and body, and it is said that the appearance management includes the meaning of taking a good care of oneself and respecting others[6][7]. Hence, in the modern society, the concept of appearance management is being converted into a broader meaning and being replaced by the concept of beauty care.

The beauty care behavior is a part of the social and cultural component, and is also a direct act of self-management. Hence, the concept of beauty care behavior is to manage appearance based on the social standards and one's own standards, which also means to act on the skin care, hair style management, and body shape management, etc., which are the sub-domains of the appearance management including fashion and clothes[8][9]. However, the body image may be approached as a separate concept. The body image may be viewed as a concept which influences self-efficacy and self-confidence[10][11]. That is, body image may be divided into the body perception, which refers to the extent to which each individual perceives his or her own body, and the body satisfaction, which deeply correlates to the body shape, weight, and the appearance, etc.

This study pays a large attention to the changes in the women's perception of beauty care due to COVID-19. COVID-9(SARS-CoV-2, Severe acute respiratory syndrome coronavirus 2) was first reported in December 2019, and on March 11, 2020, the World Health Organization officially declared a global pandemic for the first time[12][13]. Such infectious disease called COVID-19 is a social disaster, and as it prolongs, more people are increasingly fatigued by anxiety and fear. Representatively, such phenomena as depression, anxiety disorder, sleep disorder, mental stress, isolation, loneliness, severance of relationships, and social stigma are warning about a Mental-demic, whose mental trauma is prevalent just like infectious diseases[14][15].

Therefore, terahertz technology can be easily applied in various fields beyond the laboratory level with the background of modern advanced technology, and the outlook is highly anticipated as a technology with high utilization. Therefore, this study attempts to look at the characteristics of terahertz waves and check the applied technology currently being used. The results of this study could serve as an opportunity to confirm the usefulness of terahertz waves according to human body application and positive aspects for the treatment of chronic diseases.

The Korean society is experiencing something which it has never experienced via COVID-19, and changes are making their progress at such an exponential rate across each field in preparations for the post-COVID-19 era. Even in the field of beauty and health, the restrictions on leisure activities due to gathering bans, increases in the contactless purchases online and via SNS, changes in the beauty behavior patterns due to wearing a mask, increases in the personal consumption called "Sohwakhaeng(small but sure happiness)," and settlement of contactless lifestyles, etc., are demonstrating very different changes from the past. Hence, the most important task is to promptly transition towards the current situation by grasping the social changes and trends after COVID-19[16].

Hence, this study was conducted by using a phenomenological approach among the qualitative research methods, which is an inductive narrative method, with a view to examine in greater depth as to what changes are taking place in the women's perception of beauty care after COVID-19. Based on the results of this study, the work of verifying in depth the changes in the women's perceptions and experiences of the beauty care after COVID-19 will allow one to understand the components, processes, and the meanings experienced by the participants in vivid languages.

## 2. Methods

### 2.1. Information of the research participants

As for the research participants, 8 women who are serving in the beauty and health related industry in Korea were selected via the purposive sampling method. In the phenomenological research method, sufficient conditions are considered only when a participant who may reflect the experiences according to the research topic well and provide the closest information is selected[17]. Hence, to select the research participants who satisfy the purpose and background of this study, 4 active participants were recommended by a beauty health related organization and proceeded for the 1st round.

**Table 1.** General characteristics of study participants.

No	Name	Gender	Age	Occupation	Marital status	Amount required for beauty care
1	Participant 1	Female	53	Self-employment	Married	200,000 KRW
2	Participant 2	Female	39	Self-employment	Married	200,000 KRW
3	Participant 3	Female	40	Freelancer	Married	200,000 KRW
4	Participant 4	Female	46	Skin beautician	Married	200,000 KRW
5	Participant 5	Female	46	Skin beautician	Married	300,000 KRW
6	Participant 6	Female	36	Self-employment	Married	200,000 KRW
7	Participant 7	Female	26	Freelancer	Single	500,000 KRW
8	Participant 8	Female	27	Skin beautician	Single	300,000 KRW

As for the participant sampling method, 4 additional research participants were added, and final participants were selected by using the method of snowball sampling, which is also called “chain sampling” or “reference sampling.” Unlike the quantitative research, the non-probability sampling for the qualitative research always has limitations in the generalization of research results. Hence, it has the advantage of securing the content validity to conduct research by recruiting the research participants who may faithfully respond during the in-depth interviews conducted via the snowball sampling[18][19]. The general characteristics of the research participants are as illustrated in <Table 1>.

### 2.2. Data collection and the analytical process

In this study, data collection was primarily conducted by the in-depth interviews, and as for the auxiliary method, participatory observation and literature review for the theoretical extraction of the study were carried out. The in-depth interviews took on the form of open-ended interviews via the semi-structured questions, and began after the consent form was completed before the interviews were conducted. If the face-to-face interviews were not easy to carry out due to COVID-19 for the interviewing purposes, contactless interviews were utilized by SNS at the same time.

The data collection for the interviews of the research participants identified the characteristics and experiences of the perception of beauty care, which changed after COVID-19 through the questions, and even the facial expressions and behaviors of the participants were used as the observation data. Hence, the researcher set the in-depth interviewing time to last approximately 30 to 40 minutes, conducted at least 2 sessions per research participant, and the conversations were recorded between March and April 2021 by using a recorder. The contents recorded were transcribed by using a word processor, and the contents determined to be insufficient were supplemented by conducting additional interviews.

As for the contents of the interviews, the contents of the questions were structured by the preliminary interview, and the understanding of the contents of the questions was confirmed, and the contents were supplemented via expert meetings. The question structure of the in-depth interviews was consisted of the questions on the background characteristics of the population, and the changes in the makeup, clothes, hairstyles, convenience and inconvenience of wearing a mask after COVID-19, methods of body shape management, and the reactions and evaluations of the surroundings, etc., with semi-structured questions.

### **2.3. Securing of the validity and reliability of the research**

As for the data analysis of the in-depth interview contents, the 4-step phenomenological analytical method proposed by Giorgi was used, and to secure the validity of the study, the 8 evaluation criteria of the phenomenological research proposed by Cresswell for the validity strategy of the qualitative study were applied mutatis mutandis [17][20]. Furthermore, to secure the reliability of the study, the truth value, applicability, consistency, and neutrality proposed by Guba and Lincoln were applied [21].

The evaluation criteria for securing the validity of the study are as follows. First, the researcher conducted the continuous participation and observation to check for the misrepresented or distorted information of the research participants. Second, for the peer reviews, the perspectives of relevant experts were accepted and reflected. Third, the relevant theories and other complex data were confirmed for the validity of the study. Fourth, the meaning of extreme statements and opposite statements during the transcription were confirmed and reflected. Fifth, the pre-conceived notions, prejudices, and the researcher's experiences which may appear in the process of forming the interpretation of the participant interview were excluded and described to the extent possible. Sixth, by undergoing the procedure of confirming the data secured during the 1st round of interviews with some research participants, opinions were requested. Seventh, the detailed story descriptions of the research participants were carried out in advance and were included in the general structure statements of Giorgi's phenomenology approach later. Eighth, by listening to the opinions of beauty health experts on the changes in the beauty care behavior, the contents and accuracy of the statements presented in the research results were reviewed.

To secure the reliability of the qualitative research, the subjective viewpoints and bias of the researcher ought to be excluded to help enhance the theoretical orientation. Accordingly, in this study, the reliability criteria were based on the following 3 perspectives.

First, the factual value is a concept similar to the internal validity of quantitative research, which may be viewed as a criterion for evaluating the value of the research participants' perception and experience, and also refers to how well the vivid experiences are described. Towards this end, the researcher intentionally invited the people with a lot of experience related

to beauty health who may express the research content well, and formed intimacy and conducted the interviews considering the time and place to the extent possible. In the process of arranging the feedbacks of the research participants, the titles of “President” or “Sir” were used to create a formal and gentle situation to the extent possible to ensure that the interview contents of the research participants would uncover their actual experiences.

Second, the applicability of the qualitative research is a concept which resembles the external validity of the quantitative research, and also refers to the extent to which the research results were secured from the research participants may be generalized. Towards this end, the researcher induced the participants to state their own experiences to the extent possible to ensure the data saturation, and underwent the procedure of confirming so through the external expert meetings as to whether such statements effectively reflect the experiences of the women’s perception of beauty care after COVID-19.

Third, the consistency of the qualitative research is a concept which resembles the reliability of the quantitative research, and also refers to the consistency and evaluation criteria for the research results through the data collection and analysis. That is, even if other researchers follow the research procedures used by the researcher for the qualitative research, they ought to reach similar conclusions without contradicting themselves depending on the researcher's data, researcher's perspective, and the situations of participation observation. Towards that end, the researcher prepared the research design separately, and also specified the procedures related to the data collection, data analysis, and the data interpretation in detail.

Finally, fourth, the neutrality of the qualitative research may be viewed to be corresponding to the objectivity of the quantitative research, which means that the research process and results ought to be neutral from against bias, and may also be viewed similarly to the concept of corroboration. Towards this end, to maintain the neutral attitude, the researcher prepared a memo to exclude the preconceived notions of the research participants, and used it for the research notes. Furthermore, the researcher endeavored to describe the perspective of the perception of beauty care which has changed since COVID-19 by checking on the context from the perspective of the research participants.

### 3. Results

#### 3.1. Components concerning the participants' experiences of the changes in the perception of beauty care

As for the results of the study, 113 semantic units, 20 sub-components, and 6 elements were eventually derived. The contents of the components were identified to be the changes in the perception of information search, changes in the interest of beauty, positive perception of evaluation according to wearing a mask, negative perception of evaluation according to wearing a mask, observation of other people's appearance management and information exchange, and the changes in the interpersonal perception. The components of the participants' experiences of changes in the perception of beauty care are as illustrated in <Table 2> below.

**Table 2.** Components of participants' experience of changing perception of beauty care.

Component	Subcomponent	Representative unit of meaning
Change in information search perception	Accelerated recognition of information search through online	<ul style="list-style-type: none"> <li>▪Increased time to search for information using SNS</li> <li>▪Information search through connection between TV home shopping and online shopping</li> <li>▪Increased search for beauty information through online blogs</li> <li>▪Frequently search for information on the Internet</li> <li>▪Often use YouTube diet information</li> </ul>

Changing interest in beauty	Convergence change of perception between beauty and health	<ul style="list-style-type: none"> <li>▪ Being more concerned about beauty and health information</li> <li>▪ Beauty information is found based on health information</li> <li>▪ Recognizing the need for healthy beauty</li> <li>▪ Convergent thinking that thinks about beauty and health together</li> </ul>
	Recognizing the convenience of non-face-to-face information search	<ul style="list-style-type: none"> <li>▪ Experience to obtain sufficient information non-face-to-face</li> <li>▪ Convenient to get information without going out</li> <li>▪ Information search possible regardless of time and place</li> <li>▪ Convenience of meeting with zoom</li> </ul>
	Increased search for beauty information related to wearing a mask	<ul style="list-style-type: none"> <li>▪ Increased product searches for skin care due to mask problems</li> <li>▪ Increased interest in fashion and makeup that go well with wearing a mask</li> <li>▪ Fashion mask information search</li> </ul>
	Changing perception of makeup style	<ul style="list-style-type: none"> <li>▪ Make-up is done around the eyes</li> <li>▪ Use products that do not stick to the mask</li> <li>▪ Mainly concerned about eyelash extensions</li> <li>▪ Take care of invisible areas more than visible makeup</li> <li>▪ Skin make-up is softened and eye make-up is thicker</li> </ul>
	Changes in perception of body shape management	<ul style="list-style-type: none"> <li>▪ More attention to body shape than face care</li> <li>▪ Learned the importance of walking and practiced it frequently</li> <li>▪ Efforts to maintain body shape</li> <li>▪ Preference for simple exercise that can be easily done in daily life</li> </ul>
	Changes in perception of hairstyles	<ul style="list-style-type: none"> <li>▪ More time to focus on hair style than makeup</li> <li>▪ Frequent styles of simple hair</li> <li>▪ No special care required by wearing a hat</li> <li>▪ Only hair care rather than hairstyle</li> </ul>
	Recognition of change in fashion style	<ul style="list-style-type: none"> <li>▪ Use small earrings and necklaces without wearing excessive accessories.</li> <li>▪ Becoming more concerned about clothes than makeup</li> <li>▪ Always prefer to wear casual clothes on days when there are no important appointments</li> <li>▪ Matches the mask color to the attire</li> </ul>
Positive perception of wearing a mask	Change to comfortable clothes	<ul style="list-style-type: none"> <li>▪ Prefer comfortable clothes rather than flashy clothes</li> <li>▪ Always change to comfortable casual style</li> <li>▪ Wear comfortable clothes for activities</li> </ul>
	Face care made easy	<ul style="list-style-type: none"> <li>▪ Effects to make the face appear smaller</li> <li>▪ Masks cover scars and other parts of the face</li> <li>▪ Light makeup is convenient for washing face</li> </ul>
	Easy make-up possible	<ul style="list-style-type: none"> <li>▪ Makeup is slightly lighter</li> <li>▪ Little to no lipstick use</li> <li>▪ The area covered by the mask is no longer put on makeup</li> <li>▪ Decreased amount of cosmetic purchases</li> </ul>
Negative perception of wearing a mask	Frequent skin problems	<ul style="list-style-type: none"> <li>▪ Often uncomfortable due to shortness of breath</li> <li>▪ Frequent skin troubles on the face</li> <li>▪ Wearing a mask is uncomfortable because of moisture and friction on the face.</li> <li>▪ The number of visits to skin care shops increases</li> </ul>
	Uncomfortable to makeup	<ul style="list-style-type: none"> <li>▪ Makeup is removed over and over again, so it takes more time to fix it</li> <li>▪ Check if cosmetics are on the mask</li> <li>▪ Make-up base may be smeared on the mask</li> <li>▪ Inconvenience of not being able to use lipstick</li> </ul>

Observing the appearance of others and exchanging information	Lack of appearance management	<ul style="list-style-type: none"> <li>▪Not paying attention to appearance</li> <li>▪Not interested in washing face</li> <li>▪Don't care about clothes because of face with a mask</li> </ul>
	Observing other people's fashion	<ul style="list-style-type: none"> <li>▪Observing other people's clothing</li> <li>▪Become interested in how others are using accessories and fashion</li> </ul>
	Observing other people's makeup	<ul style="list-style-type: none"> <li>▪Exchange information about what cosmetics are not on the mask</li> <li>▪Become interested in other people's makeup methods</li> </ul>
	Exchange of skin care information	<ul style="list-style-type: none"> <li>▪ Others are more interested in how to care for their skin</li> <li>▪Exchange information about skin care with around people</li> </ul>
Changes in interpersonal perception	Gaining control over the beauty care environment	<ul style="list-style-type: none"> <li>▪Priority will be given to quarantine rules and disinfection</li> <li>▪Trying to relate to people non-face-to-face</li> <li>▪The number of online consultations and purchases for beauty care products is also increasing</li> </ul>
	Difficulty in interpersonal relationships	<ul style="list-style-type: none"> <li>▪ The face is covered with a mask, so the expression of the other person cannot be seen</li> <li>▪ Wearing a mask can only know emotions through human eyes</li> <li>▪ Feeling afraid of being exposed to an infectious disease</li> </ul>
	Consider the evaluation of the surroundings	<ul style="list-style-type: none"> <li>▪Appearance evaluations of people around me</li> <li>▪I want to be well evaluated for my own body shape care</li> <li>▪Sometimes I want to express my personality with parts other than my face</li> </ul>

### 3.2. General structural statements on the participants' experiences in the changes of the perception of beauty care

In the process of making situational structure statements, the situation and personal context are structured via the personal characteristics, yet as for the general structure statements, the participant's experiences are integrated from the perspective of the overall context, and are a process of making comprehensive statements. The contents expressed as the general structural statements by integrating the experiences of the participants in this study are as follows.

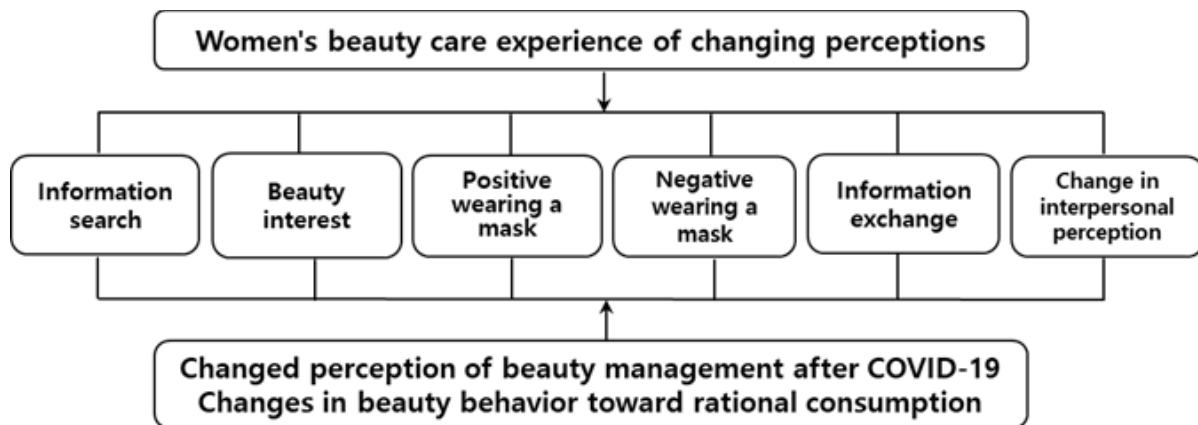
The women, who are research participants, were experiencing the restrictions in their beauty care behavior and changing their perceptions due to COVID-19. In the past, information was exchanged by using SNS, but they had a common perception that the time to search for beauty information online will increase and accelerate after COVID-19. In the change of the interest in beauty, changes in the makeup style were commonly experienced. Wearing a mask at all times made them pay greater attention to the basic makeup, and they were aware that a partial makeup is sufficient in lieu of a full makeup.

Among the changes in the interest in beauty, the parts which the participants commonly recognized were weight control and the body shape management. With fewer people going out and given the social distancing in place, the frequency of ordering food deliveries instead of going to restaurants has increased. Due to the decrease in the amount of activity and the decrease in the hours of exercise, most of the participants began to worry about their body shape management. Consequently, some participants preferred simple exercises which could easily be performed in their daily lives, while others focused their attention on the individual exercises which did not have much contact with people. Such changes in the perception of the body shape management demonstrates a changed perception of the appearance management, including the importance of health, due to COVID-19.

Changes in the hairstyles and perceptions of the fashion styles reflect the dramatic changes in the interest in beauty after COVID-19. Many participants preferred a simple hairstyle due to wearing a mask, and there were incidents where they paid greater attention to the hairstyle than the makeup. As for the fashion style, the participants' perceptions were somewhat mixed.

Some participants avoid wearing excessive accessories and prefer small earrings and necklaces, or wear comfortable clothes without wearing accessories, whereas some participants wanted to express their individuality via parts other than their faces given the fact that they could not wear makeup and wore a mask to cover their face.

**Figure 1.** A general structural statement model on the experience of changing perceptions of beauty care.



The participants had both the positive and negative perceptions of evaluation according to wearing a mask. As for the positive evaluation, they came to prefer to wear plain clothes rather than flashy clothes, and they claimed that their face looked small because it is covered with a mask or that it is easy to take care of it, such as with a light makeup. However, during the negative evaluations, they complained about frequent skin troubles and inconveniences when applying their makeup. Some participants even evaluated on their own that they were lazy since they were less concerned about their appearance due to wearing a mask.

Among the notable changes in the perception due to COVID-19 is the participants' own control over the beauty care environment. Previously, they used to visit a beauty shop or managed themselves face-to-face, but due to the concerns about infectious diseases, meeting others became difficult, and fears arose. Hence, online consultations and purchases of the beauty care products were also frequently used, and the participants were making efforts to connect with people in a contactless manner rather than face-to-face to the extent possible. <Figure 1> above illustrates the structure of the women's experiences in the changing perceptions of the beauty care after COVID-19.

#### 4. Conclusion and Recommendations

Recently, the individualization and further classification of the appearance management have had such a great influence on the perception of beauty. They have become a social phenomenon for the young people to move towards beauty behaviors by comparing and analyzing the economic efficiency and practicality primarily via the SNS and online, and a new word called “retaliatory consumption” was conceived due to COVID-19. The women's perception of beauty care may be viewed as a concept which includes both the interest in and information about beauty, and such perception is manifested in the beauty care behaviors for the appearance satisfaction such as makeup, hair style, fashion style, and body shape management[22]. Based on the results of this study, it was verified that the women's perception of beauty care has changed, and that it is transforming into the beauty behaviors for rational consumption according to the situation due to the social disaster of COVID-19.

The beauty related behaviors intended for the women's appearance satisfaction may be basically classified into makeup, hair care, fashion style management, body shape management,

skin care, and cosmetic surgery, and it has been said that the changes are brought about according to socio-cultural attitudes[23][24]. The spread of an infectious disease called “COVID-19” is the primary factor which has brought about a significant change in this beauty behavior in the modern society. The unprecedented daily routine of wearing a mask and social distancing have brought about changes throughout our society, whether desired or not, and accordingly, changes are naturally taking place in the women's perceptions and behaviors related to beauty.

Based on the results of this study, it was verified that the Korean women's perception of beauty care has changed, and that it is transforming into the beauty behaviors for the rational consumption according to the situation due to the social disaster of the COVID-19. It is expected that such research results will be used as the behavioral scientific data on the changes in the women's beauty care in the future era of infectious diseases.

The recommendations for future researches are as follows. First, the participants of this study were women. Hence, a study on men will also be needed for the follow-up studies, and if the men's and women's perceptions of beauty care are compared, specific changes in the perceptions by gender may be verified. Second, if a validated rating measurement tool which may measure the beauty care behavior is developed based on the concept of beauty care perception, scientific researches on the beauty behavior may be conducted extensively with precision.

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## 6. Appendix

### 6.1. Authors contribution

	Initial name	Contribution
Lead Author	HL	-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*	JL	-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	HK	-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"/>

# Protection Convergence

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Corresponding author\*  
E-mail: jaebumlee@mju.ac.kr

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## Analysis Perception and Attitude on PAIN RELIEF Effect of Meridian Massage and Hyperthermia Program

Eunhee An<sup>1</sup>

Myongji University, Seoul, Republic of Korea

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

Myongji University, Seoul, Republic of Korea

Eungyul Na<sup>3</sup>

Dongbang Culture University, Seoul, Republic of Korea

### Abstract

**Purpose:** This study, the focus group interview was utilized to explore in depth the perceptions and attitude towards the effects of meridian massage and thermotherapy, which are widely used by and at beauty & health multi shops as the pain relief intervention programs.

**Method:** As for the study participants, 16 participants and managers who have used meridian massage and thermotherapy of the beauty health multi shop for 10 years or longer were selected by a nomadic sampling method through an expert meeting. The focus group interview was conducted by dividing the users and participants of meridian massage and thermotherapy into 2 groups. As for the analysis of contents, attempts were made to categorize the data through open coding and axial coding via systematic methods of the qualitative research

**Results:** As a result of conducting the group interview on the perceptions and attitude of the users and managers of the beauty health multi shop on the pain relief programs, 4 areas, 14 themes, and 92 categories were derived as a result of performing the repeated comparative analysis of data, and the common contents among the groups were confirmed in an integrated manner.

**Conclusion:** In this study, the perceptions and attitude of the users and managers concerning the meridian massage and thermotherapy, which are used as pain relief programs at and by beauty & health multi shop, were confirmed by using the focus group interview. Various and factual opinions were ascertained based on the results of this study, and it is well expected that they will be used as the basic data for the non-medical health care service area moving forward.

**[Keywords]** Meridian Massage, Hyperthermia, Perception, Attitude, Focus Group Interview

## 1. Introduction

Due to the recent development of medicine and the improvement of living standards, the interest in the effective management of chronic diseases has risen together with the extension of life expectancy. Chronic diseases refer to the situations which threaten health, and the diseases cause the physical disabilities translating into health issues, which repeatedly improve and deteriorate, eventually causing chronic pains[1][2].

According to the recent data of the Health Insurance Review & Assessment Service of Korea, it turned out that the number of patients suffering from turtle neck syndrome(VDT syndrome) caused by the use of computer and smartphone has consistently grown over the past decade. In particular, the number of patients of the turtle neck syndrome increased significantly from 2009 until 2020, when the number of smartphone lines increased, and the number of people who underwent treatment was 4.58 million in 2009, 5.53 million in 2012, and 6.34 million in 2019, each respectively, and turned out to be 1.38 times relative to those in 2009. The number of patients suffering from the overall musculoskeletal diseases increased by 4.6% per year on

average from 2009 until 2020, while the number of patients of the turtle neck syndrome increased by 6.5% per year on average, respectively.

Meridian massage has been known as a means of facilitating the passage of “Qi,” or energy, by constantly stimulating the acupoints, which are the points of reaction distributed across the meridians, which are the passageways of Ki, based on the meridians of oriental medicine and the western theories of massage and chiropractic for manual therapy[3][4]. Meridian massage in Korea influences muscles and nerves, and promotes the local and systemic circulation of lymph and blood, and brings not only physiological effects, but also the psychological effects, thereby being utilized as a preventive method and a means of recovering and maintaining health[5][6][7]. Such meridian massage allows managing any part of the body, such as the face, hands, feet, and abdomen, which does not require any special equipment, and abdomen, which does not require any special equipment, and its economical effect has already been recognized because it is relatively easy to use[8].

It has been said that the basic theory of thermotherapy is such that maintaining a normal body temperature leads to the activation of parasympathetic nerves and the lowering of sympathetic nerves, whereby the normal regulation of the autonomic nervous system reduces health issues, and promotes the blood circulation and activates the cells to maintain health[9][10]. It is also said that the thermotherapy is an auxiliary healing therapy which helps the human body to function smoothly, activates metabolism, and enhances immunity, brings about such effects as the expansion of capillaries, facilitation of metabolic activity, removal of waste, increase in the heart rate and respiration, recovery from fatigue, anti-aging, relaxation of muscles, improvement of constitution, and alleviation of inflammation[11][12].

It has been known that the effect of stone therapy using types of stone among the thermotherapies is such that the thermal energy and far infrared rays penetrate the joints and muscles to increase the waste products and metabolism. That is, the thermal energy stimulates the skin surface to balance the energy of the human body, and is transmitted along the nerves to the spinal cord, while moving to each of the relevant parts of the body to cause influence.

In this study, the focus group interview was utilized to explore in depth the perceptions and attitude towards the effects of meridian massage and thermotherapy, which are widely used by and at beauty health multi shops as the pain relief intervention programs. Focus group interview is a form of the qualitative research method intended to gain the perception and attitude for a small number of group regarding specific themes, and a planned discussion may be held in a free ambience[13][14]. Furthermore, the focus group interview has the advantage of extracting the participants' experiences and opinions and presenting their similarities and differences as a direct evidence[15].

Hence, the results of the focus group interview conducted in this study will allow one to verify specifically and factually as to the experience of using the beauty health multi shops' pain relief program, and it will also be an opportunity to objectively verify the perceptions and attitudes of the users and managers participating in the program.

## **2. Research Methods**

### **2.1. Selection of the research participants**

As for the study participants, 16 participants and managers who have used meridian massage and thermotherapy of the beauty health multi shop for 10 years or longer were selected by a nomadic sampling method through an expert meeting. Through the expert meeting, the participants who have used and managed thermotherapy of the beauty health multi shop were classified and selected, and prior to the proceeding of this study, a preliminary feasibility study was conducted with 4 participants related to the meridian massage and thermotherapy.

The focus group interview was conducted by dividing the users and participants of meridian massage and thermotherapy into 2 groups. As for the analysis of contents, attempts were made to categorize the data through open coding and axial coding via systematic methods of the qualitative research. As illustrated in <Table 1>, the users and managers of meridian massage were classified into Group A, while the users and managers of thermotherapy were classified into Group B. The general characteristics of the participants are as follows.

**Table 1.** General characteristics of study participants.

Program	Division		Gender	Age	Participation period
Meridian massage (group-A)	User	1	Female	40's	19 years
		2	Female	40's	16 years
		3	Female	60's	10 years
		4	Male	40's	15 years
	Manager	5	Female	50's	10 years
		6	Female	60's	15 years
		7	Female	50's	20 years
		8	Female	50's	13 years
Hyperthermia program (group-B)	User	1	Male	60's	12 years
		2	Female	60's	18 years
		3	Male	40's	17 years
		4	Female	50's	18 years
	Manager	5	Female	50's	17 years
		6	Female	50's	20 years
		7	Male	40's	15 years
		8	Female	40's	20 years

## 2.2. Data collection

Prior to proceeding with the focus group interview, an expert meeting was held to prepare open ended questions for the interview, and a draft of interview guide structured via relevant literatures was prepared. Thereafter, a preliminary survey was conducted for the participants who have used and managed for over 10 years in the meridian massage group and the thermotherapy group to confirm the matters to be cautioned and the important questions to be asked during the interview. Furthermore, to address the issue which emerged during the data collection process and the transcription work, revision and supplementation were performed after taking advices from 2 related doctors of specialization and 1 pain relief program expert who are extensively experienced in the focus group interviews and the qualitative research.

The semi-structured interview questionnaire was modified in line with the purpose of this study by making reference to the questionnaire format of Krueger & Casey[16]. The semi-structured focus group interview questionnaire was consisted of the 5 stages of opening question, introductory question, transition question, main question, and closing question, and the main questions took on the form of specific questions on the perceptions and attitudes towards the pain relief programs. <Table 2> below pertains to the question of the focus group interview questions and the details of the questions.

**Table 2.** Focus group interview questionnaire.

No	Question order		Question content
1	Start question		Brief self-introduction Please tell me about your experience with pain relief programs.
2	Introduction question		Do you often have uncomfortable pains? Please tell me about the cause of the pain, your subjective symptoms and the medical diagnosis confirmed by the hospital.
3	Transition question		What are some uncomfortable experiences in your daily life due to pain? Have you ever used other methods for pain relief?
4	Key question	Cognition	Do you think pain relief programs are effective? If it works, what kind of pain relief have you experienced?
		Attitude	Please tell me about your satisfaction and dissatisfaction with the composition of the pain relief program. Please tell me about the value of the pain relief program.
5	Closing question		Do you think the pain relief program is suitable for use as a non-medical health care service? If there is anything you would like to say more about the pain relief program, please let us know.

### 2.3. Analytical process

The focus group interview is a work which uncover in depth the common and differentiated contents between each group to confirm the perceptions and attitude towards the relevant theme. Hence, the researcher approached the following contents for the data analysis targeting the participants.

First, efforts were made to understand the situation and language of the participants by reading and understanding the contents of the source materials repeatedly to ensure that the overall feeling of the participants' perceptions and attitudes can be understood. Second, the participants' language and expressions contain sensitivity. Accordingly, the researcher tried to convey the precise meaning by converting the interview contents of the participants into academic terms through the imaginative modification and reflection used for the qualitative research[17]. Third, to understand the essential structure of the participants' cognition and attitude, the data were analyzed by integrating the categories into the themes via open coding and axis coding. This is a work intended for deriving the final domain of the participants' perceptions and attitudes to respond to the pain relief program. Fourth, to classify the categories of source materials, themes and areas, the researcher discussed and received help from those holding doctoral degrees with various experiences across the qualitative research through the expert meeting.

In the open coding process of the data analysis, the source materials extracted from the focus group interview were classified into the categories through a repetitive process of disassembling and combining them into words and sentences. Where similarities were discovered during the classification process, corrections were made, and any irrelevant information was reclassified. During the axial coding process, the contents categories into areas of theme were finally classified into the areas again

### 3. Results

#### 3.1. Integrated analysis of the focus group interview

As a result of conducting the group interview on the perceptions and attitude of the users and managers of the beauty health multi shop on the pain relief programs, 4 areas, 14 themes, and 92 categories were derived as a result of performing the repeated comparative analysis of data, and the common contents among the groups were confirmed in an integrated manner. The contents derived into 4 areas were finally confirmed to be 'restrictions and treatment of daily life due to pains,' 'positive perception and views of the pain relief programs,' 'value evaluation of the pain relief programs,' and 'attitude for the improvement and use of the programs.' <Table 3> below tabulates the integrated analysis of the participants' focus group interview.

**Table 3.** Integrative analysis of participants' focus group interviews.

Area	Theme	Category	
		① Meridian massage user ② Meridian massage manager ③ Hyperthermia user ④ Hyperthermia manager	Common content within the group
Constraints and treatment of daily life due to pain	Discomfort in life (12)	Difficulty walking due to hip pain①③ Complaining about difficulties in working life due to neck pain①②③④ Difficulty using the computer due to numbness in the hands①② Difficulty straightening and bending the back①②③④ Difficulty in squatting②③④ Complaining about difficulty washing face and washing hair due to arm pain①②③ Difficult to wash dishes①②③ Difficulty folding laundry①②③ Difficulty moving the neck from side to side①②④ Inconvenience when getting on and off the car③ Difficulty wearing clothes and underwear② Falling objects due to lack of strength in the arms③	Participate in a pain relief program to appeal and relieve discomfort in life caused by pain
	Medical health care service cases and complaints (9)	Completed treatment in hospital③ No more treatment in hospital③ No treatment other than physical therapy①③④ Moxibustion and acupuncture treatment continued at oriental hospital②③ Recommend to continue receiving physical therapy② Continued treatment at the hospital, but with little effect①②③④ Wanting a different treatment option①② Fear of surgery③ Decreased quality of life due to discomfort①②③	Due to the limitations of hospital treatment, it is used as an auxiliary and parallel means
	Subjective symptoms (11)	Stiff neck①②③④ Stiff shoulder①②③④ Headaches and migraines①②③④ Back pain①②③④ Ear and jaw pain①② Pelvic pain①②③④ Arm numbness①②③ Back pain①②③④ Ankle pain②③ Indigestion ①③ Stress due to pain①③④	Common experiences of users and managers on the effect of relieving physical pain

Perceptions and views of pain relief programs	Naturopathy, not medications (6)	Good because it's not an artificial drug treatment①③ A few side effects①③ User can select time and place④ Definitely effective as a natural remedy①③ Find the cause of the pain and manage it①②③④ Possible to manage pain in other places as well①③	Recognize the effect as a natural remedy that does not use surgery or drugs
	Peace of mind and body (4)	Mental stability①②③ The body is relaxed and the quality of life is improved①② I feel better②④ Health and beauty together②④	
	Facilities and environment (7)	The facility is cozy and clean①③ No smell of hospital medicines①③ Management facilities are clean②④ Convenient transportation①④ Changing facilities and shower facilities①② Feel at ease with the aroma②③ Quiet and convenient when receiving management③④	
	Conveniently managed around the residence (4)	Convenient because it's near my house①② Can be managed immediately after reservation② Close to work place, so it's convenient to visit③ Pain management without going to the hospital①②	
	Inconveniences while participating in the program (6)	Pain for several days after meridian massage treatment① Hyperthermia is difficult in summer④ Management costs become a burden① Inconvenient experience due to long administration time per session③ Burdensome because of the long program period② Inconvenient because the manager changes frequently③	
Evaluating the value of pain relief programs	Physical changes (9)	Relieves neck and shoulder pain①② Constipation relief① The swelling of the swollen feet is gone③ Headache and migraine were relieved③ The pain in the back and buttocks disappears③④ Arm numbness has improved③④ Knee and leg pain has improved④ Slimming effect④ The coughing was gone③	
	Emotional change (6)	Finding stability② Comfortable feeling②③ Quality of life has improved①② Interpersonal relations have improved④ Less annoying things③ Positive thoughts in daily life①③	
	Positive evaluation of the program (4)	Meridian massage and thermal therapy are generally effective in relieving pain①②③ Not partial pain relief, but overall effect②④ Has the effect of stabilizing physically and emotionally①②④ High value of use as a health management program①②③④	High preference for pain relief programs
	Negative evaluation of the program (5)	Re-admission to hospital due to lack of treatment③ Differences between centers due to lack of consistency in the program① Economic burden because health insurance does not apply③ Pain relief differs depending on the manager's skill level and knowledge③ Hyperthermia is concerned about burns④	
Attitudes toward improving	Suggestions for program improvement	Proposal as health care for the elderly② Desire to develop and implement various programs② Developing excellent programs through scientific research④	

and using pain relief programs	(5)	When government subsidies are paid, even low-income families can use it <sup>③</sup> Encourage participation through active publicity <sup>②④</sup>	
	Proposal for use as a non-medical health care service (4)	Suitable for use as a non-medical health care service in the local community <sup>②</sup> Can be used as a health management program in the local community <sup>②③</sup> Effective when used in conjunction with hospital programs <sup>②</sup> Actively used as a health management program <sup>②③③</sup>	

### 3.2. Technical analysis by area of the focus group interview

In the process of Among the analyses performed by area in connection with the perceptions and attitude of the beauty health multi shop's pain relief program, the contents derived as the first area were finally confirmed to be 'restrictions and treatment of daily life due to pains.' Among the study participants, the user group felt discomfort in daily life due to subjective pains and were dissatisfied with the limitations of medical health care services.

Even with the manager group, the treatment at the hospital was focused on the treatment of the diseases rather than prioritizing the quality of life, and hence, it was known that if there were no surgical issues, no further treatment was required, and conservative treatment was performed with priority. Hence, as a common matters within the groups of users and managers of meridian massage, and users and managers of thermotherapy group, it turned out that the beauty health multi-shop's pain relief program is used as an auxiliary means to recognize the limitations of hospital treatment and relieve the discomfort of daily life on their own.

The contents derived as the second area was finally confirmed to be 'perception and opinion of the pain relief program.' Among the study participants, the user group recognized the positive aspect such that the use of the pain relief program of the beauty health multi shop can bring the mental and physical stability and that it could be managed comfortably around the place of residence.

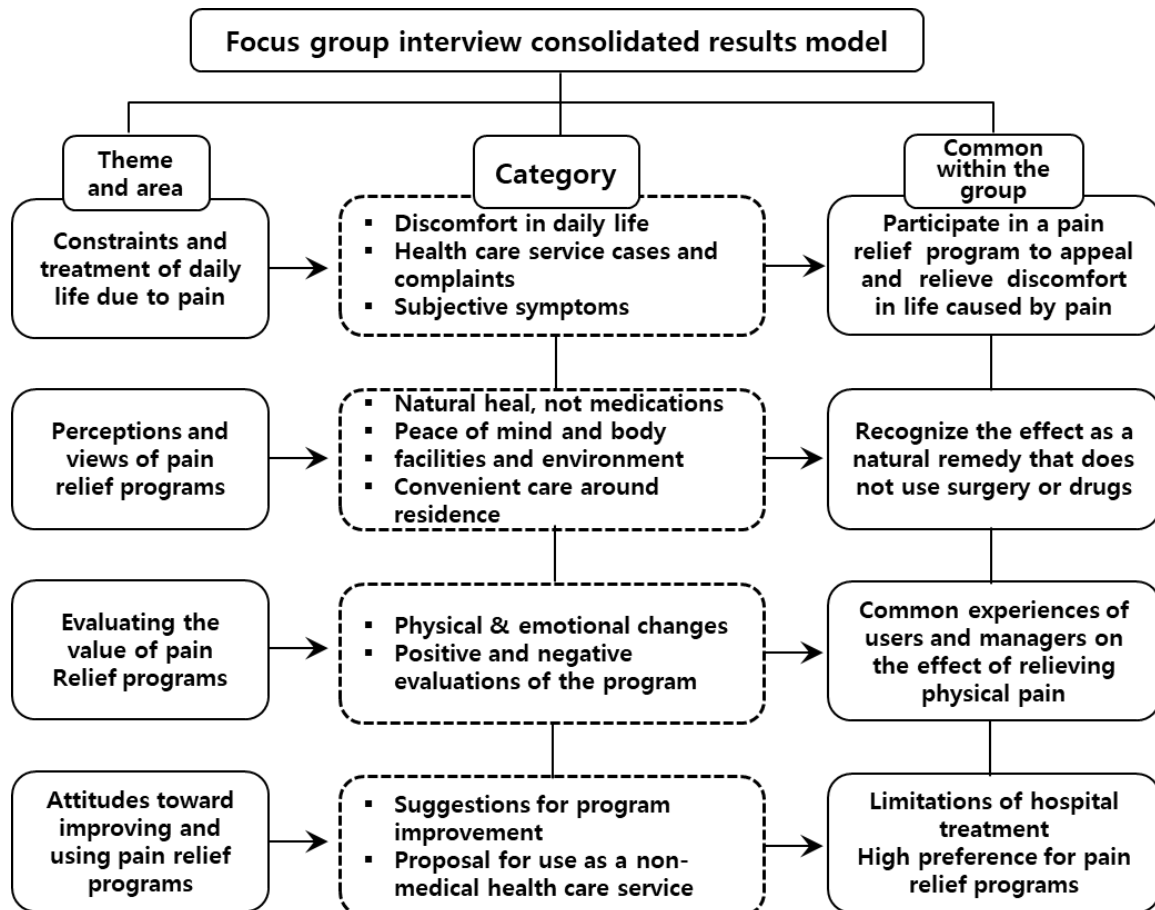
However, it was discovered that the managers were aware of the level of skill and the inconvenience of facilities and the environment. The manager group had the perception that there were few side effects since they were managed by natural healing methods rather than a drug treatment or surgery. It turned out that there was a strong perception of the effects of natural remedies which do not use surgery or drugs as a common matter within the group of users and managers.

The contents derived as the third area were finally confirmed to be 'value evaluation of the pain relief program.' The user group which participated in the program recognized the physical and emotional changes, and also demonstrated a positive attitude towards the effect. However, there were cases where negative perceptions and attitudes towards the program contents were demonstrated. That is, there were cases where the effects did not demonstrated well, and hence they had to revisit the hospital, and there were also cases where they felt financial burdens since health insurance was not covered, and there were cases where they negatively evaluated the differences depending on the level of skill and knowledge of the managers. As a common matter within the group of users and managers, they were experiencing the effects of physical pain relief. However, it was confirmed that there are different opinions on the emotional effect. Consequently, in the area of the value evaluation of the pain relief program, positive perceptions and attitudes and the negative perceptions and attitudes manifested in tandem.

The contents derived as the fourth area were finally confirmed to be 'attitude for the improvement and use of the program.' The participants desired to develop an excellent program supported by scientific research to help improve the quality of the pain relief program of beauty health multi shop, and help low income families and chronic pain patients through government subsidies. In particular, from the manager's position, it is possible to use them as non-medical

health management services, and hence, recognized that it is necessary to actively utilize them as a health program in connection with hospitals in the local community. As for a common matter within the group of users and managers, it turned out that they desire for positive changes through the continuous research and publicity. <Figure 1> below illustrates the integrated model following the results of the focus group interview.

**Figure 1.** An integrated model based on the results of a focus group interview.



#### 4. Conclusion and Recommendations

People of the modern society have increased their sedentary work in the course of their complex social life and complain of their muscle and skeletal pains due to improper postures [18]. In this study, the perceptions and attitude of the users and managers concerning the meridian massage and thermotherapy, which are used as pain relief programs at and by beauty health multi shop, were confirmed by using the focus group interview.

A most prominent aspect of the research results was the attitude of the participants who perceived the meridian massage and thermotherapy to be among the naturopathies. The comparison of changes in the body composition via the meridian massage and Swedish massage treatments across previous studies have also uncovered that they have acted as an intervention factor, and it was claimed that such therapies are natural healing therapies, which are not artificial or compulsory [19]. Furthermore, a study which articulated the natural healing effects of the thermotherapy on human physiology also reports that the naturopathies such as main thermotherapy, thermal belly belt, thermal mat, and lower body bath have had an effect on the

physiological and metabolic changes of the human body, which are similar to the results of this study[20].

Another aspect to pay attention to among the results of this study is that, while there are many studies which have presented their results on the positive effects of the existing meridian massage and thermotherapy, in this study, it was identified that the negative perceptions and attitudes towards the program are as prevalent as the positive ones. Examining the previous studies on the effects of meridian massage and thermotherapy[21][22][23], those on the positive aspects of physical and emotional effects were derived as the research results, and the research results for the negative evaluation were hardly found. Hence, in the value evaluation of the pain relief programs derived from the third area of the results of this study, it may be deemed as a peculiar result that various negative aspects were derived.

In the non-medical health care service area presented as a key opinion among the results of this study, the hope that they will be actively used as a pain relief program presents an important implication for Korea's medical reality. That is, if consent is secured for the confirmation and collection of one's personal health information, and if counseling is carried out by citing the research results of a health intervention issued by a publicly accredited research institution or a government institution, naturopathy programs may be adequately provided to the users without concerns about the medical law being violated [24].

Furthermore, in the study of Kim & Lee[25] on the non-medical health care service area and the direction of the utilization of smart health care, our society is breaking away from the existing passive and unilateral health care services, whereby the acceptability and accuracy are largely improved based on the Big Data and Cloud. said to be expanding. Hence, it may be well expected that the appropriate program structure and implementation of the meridian massage and thermotherapy, which are the pain relief programs carried out by and at the beauty health multi shop, will create various values in the local community.

Various and factual opinions were ascertained based on the results of this study, and it is well expected that they will be used as the basic data for the non-medical health care service area moving forward. Furthermore, in the future studies, if the meta analysis of the meridian massage and thermotherapy will be performed, and if the physiological and psychological effects on the human body are separately classified and presented, it will be helpful to scientifically articulating and specifying the positive effects of each therapy.

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## 6. Appendix

### 6.1. Authors contribution

	Initial name	Contribution
Lead Author	EA	-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*	JL	-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	EN	-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"/>

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Corresponding author\*  
E-mail: jaebumlee@mju.ac.kr

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## Analysis of Differences in Fun, Flow, and Self-Directed Learning According to the Background Variables and Characteristics of the Senior Citizens Participating in the HEALTH QIGONG Program

Dong Liang<sup>1</sup>

Myongji University, Seoul, Republic of Korea

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

Myongji University, Seoul, Republic of Korea

Hyunwoo Kim<sup>3</sup>

Dongbang Culture University, Seoul, Republic of Korea

### Abstract

**Purpose:** This study has analyzed the differences between fun, flow, and self-directed learning according to the background variables and the characteristics of senior citizens participating in the Health Qigong program with a view to use them as the basic data for the senior citizens' health education.

**Method:** Participants in this study were 241 elderly people participating in the Health Qigong program at senior welfare centers, senior centers, and public health centers located in Seoul and Gyeonggi-do, Korea. As an analysis method, MANOVA was conducted to examine the differences in fun, flow, and self-directed learning according to background characteristics such as age, education, training experience, number of training sessions, and residence type, which are background variables of the elderly.

**Results:** As a result of study, the fun variable, flow variable, and the self-directed learning variable demonstrated differences each according to the demographic background variable. In particular, it was evident that the demographic characteristics of age, training experience, and number of training sessions demonstrated the statistically significant differences for fun, flow, and self-directed learning.

**Conclusion:** The results of this study demonstrate the possibility that very active physical activities and related experiences for the senior citizens for health intervention would bring about the self-directed learning through the experiences of fun and flow, which in turn might impact the improvement of the quality of life for the old age. It confirmed that in terms of the operation of the Health Qigong program, it is necessary to accommodate the needs by age, experience, and number of training sessions, and also induce the senior citizens participating in the exercises to participate in the program positively through the development of the Health Qigong program towards that end.

**[Keywords]** Health Qigong, Senior Citizens, Fun, Flow, Self-Directed Learning

## 1. Introduction

In modern society, the aging trend continues in tandem with the changes in the demographic structure, and related issues have spanned from those to be solved by individuals to those which all members of the society must solve. This is because it has emerged as a real issue which, including the social and economic issues which have not been encountered before, has expanded to those of welfare and the quality of life for the individuals [1][2]. According to the data from Korea's National Statistical Office in 2020, as of September 2020, the population aged 65 and older exceeded 8,125,000, and the senior citizens account for approximately 15.7% of the entire population, giving rises to the changes in the demographic structure.

Among the various issues expressed during the old age, the largest issue which the individuals have experienced is the desire to enjoy a healthy life, yet the health evaluation has not turned

out to be so well. According to the recent social survey data of Korea, the life expectancy for men is 79.7 years, and 85.7 years for women, which is expected to increase continuously if the period of illness is excluded, and it may also be confirmed that they are living through the period of illness[3][4]. This means that, as the life expectancy increases, the time to suffer from diseases or injuries will also increase.

Recently, many studies have been conducted on the variables of health intervention which affect the life and behavior of the old age. Health Qigong, which is focused on in this study, means the health exercise which carries the values of Chinese medicine modernized by integrating the Qigong movements of the ancient times by the Chinese government[5][6]. As a new lifelong movement of physical education, Health Qigong is undergoing studies in various directions on the psychological and physiological changes of the senior citizens[7][8][9].

In this study, attempts have been made to validate the differences between the three different variables according to the characteristics of the background variables. Designated as the first variable, fun is a positive emotional response felt during the undertaking of task activities, and is also a very comprehensive concept which includes both the intrinsic and extrinsic motivations. In the instant one feels fun, the mental and physical stress disappears, and it spreads throughout the entire body and mind as a very light feeling, and itself becomes joyful[10][11]. Designated as the second variable, flow means a state of the complete cognitive and behavioral immersion when participating in sports or leisure activities[12][13]. Third, self-directed learning means a series of learning processes in which one focuses on self-direction and control and manages on one's own regardless of other facilitators[14][15].

As such, this study has analyzed the differences between fun, flow, and self-directed learning according to the background variables and the characteristics of senior citizens participating in the Health Qigong program with a view to use them as the basic data for the senior citizens' health education. Based on the results of this study, it is intended to provide the basic data with which Health Qigong may be used as a new model for the senior citizens' health education.

## 2. Research Methods

### 2.1. Research participants

This study was conducted from November 2019 until January 2020, targeting 300 senior citizens participating in the Health Qigong program at the senior citizens' welfare centers, senior citizens' centers, and the public health centers in City S of Province G. First, a preliminary survey was conducted for 50 participants to check as to whether the contents of the questionnaire and the contents of this study were mutually consistent. Based on the contents of the basic survey conducted, the contents of the questions were verified, and some revisions were made in line with this survey. The participants' samples were collected by the convenient sampling method and the judgement sampling method, while 250 copies of the questionnaires were distributed and 241 valid response sheets were used for the final analysis. The general characteristics of the study participants are as illustrated in <Table 1> below.

**Table 1.** General characteristics of study participants.

Division	Cases / number of people		Percentage
Gender	Male	57	23.7
	Female	184	76.3
Age	65-74 years old	61	25.3
	75-84 years old	141	58.5
	Over 85 years old	39	16.2

Academic background	Less than elementary school	8	3.3
	Elementary school graduation	56	23.2
	Middle School graduation	72	29.9
	High school graduation	85	35.3
	University graduate or higher	20	8.3
Training experiences	Less than 1 year	96	39.8
	1 year-less than 2 years	119	49.4
	2 years-less than 3 years	25	10.4
	More than 3 years	1	0.4
Number of training sessions per week	1 time	78	32.4
	2 times	135	56.0
	3 times	26	10.8
	4 or more times	2	0.8
Sum	241	100	

## 2.2. Tools of measurement

In this study, as for the fun measurement tool set as an independent variable for the senior citizens participating in the Health Qigong program, the survey contents studied on the effects of the Health Qigong fun variables of women senior citizens on the health related quality of life were revised and supplemented in line with this study[16]. There are a total of 22 survey questions, and 5 sub-variables were set, including 5 physical strength and health related questions, 5 compliment related questions, 4 family support related questions, 4 interpersonal relationship related questions, and 4 learning related questions. The Cronbach's  $\alpha$  value, which is the reliability coefficient between each question, turned out to be reliable, with .789 for physical strength and health, .784 for compliment, .743 for family support, .773 for interpersonal relationship, and .871 for learning related, respectively.

As a tool for measuring the flow of the senior citizens participating in the Health Qigong program, the survey contents used for the study of the flow and the health related quality of life of the web based Qigong training participants were revised and supplemented in line with this study[17]. The survey questions were consisted of a total of 10 questions, and were set as 2 sub-variables, including 6 questions for cognitive flow and 4 questions for behavioral flow. The Cronbach's  $\alpha$  value, which is the reliability coefficient between each question, turned out to be reliable, with .744 for cognitive flow and .704 for behavioral flow, respectively.

The self-directed learning's measurement tool, which was set as a dependent variable of the senior citizens participating in the Health Qigong program, was revised and supplemented in line with the questionnaire conducted in the previous study[15]. The survey questionnaire was consisted of a total of 13 questions, and were set as 4 sub-variables, including 4 questions for openness to learning opportunities, 3 questions for initiative for learning, 3 questions for affections for learning, and 3 questions for problem solving skills. The Cronbach's  $\alpha$  value, which is the reliability coefficient between each question, turned out to be reliable, with .752 for openness to learning opportunities, .706 for initiative for learning, .672 for affections for learning, and .712 for problem solving skills, respectively.

## 2.3. Data processing

The data surveyed for this study were empirically analyzed by using the SPSS 21.0 program, and the specific data processing method was as follows. First, the principal component analysis was performed to examine the validity of fun and flow and self-directed learning scales of the senior citizens participating in the Health Qigong program, and to validate the reliability of each

variable, the Cronbach's  $\alpha$  coefficient was calculated for the internal consistency of the questions. Second, the correlation analysis was performed to verify the intensity and direction between the fun and flow and self-directed learning variables of the senior citizens participating in the Health Qigong program. Third, the MANOVA was performed to examine the differences in fun, flow, and self-directed learning according to the background characteristics such as gender, age, academic background, training experience, number of training sessions, and form of residence.

### 3. Research Results

#### 3.1. Differences between fun, flow, and self-directed learning according to gender

<Table 2> illustrates the results of the MANOVA performed to validate the differences of the variables according to age. It turned out that the age and fun variables(Wilk's Lamda=.980,  $p=.016$ ), age and flow variables(Wilk's Lamda=.971,  $p=.034$ ), and the age and self-directed learning variables(Wilk's Lamda=.952,  $p=.023$ ) all demonstrated significant differences. Furthermore, examining the inter-individual validation effects, the physical strength and health variables( $F$  value=1.406,  $p=.047$ ) and the learning related variables( $F$  value=.812,  $p=.045$ ) demonstrated significant differences for the fun variable according to age. As for the age and flow variables, the cognitive flow variables( $F$  value=.891,  $p=.012$ ) demonstrated significant differences, while the learning initiative variables of the age and self-directed learning variables( $F$  value=.623,  $p=.037$ ) demonstrated significant differences.

**Table 2.** Results of difference in fun, flow, and self-directed learning according to gender.

Variability	Dependent variable	Sub-factor	Wilks' lamda	Significance probability	Sum of squares	Degree of freedom	Mean square	F	Post-hoc
Age	Fun	Physical strength and health	.980 ( $p=.016$ )	.047	.517	2	.258	1.406	a>b
		Compliment		.364	.448	2	.224	1.016	
		Family support		.066	.424	2	.212	1.010	
		Interpersonal relationship		.086	.266	2	.133	.536	
		Learning related		.045	.523	2	.261	.812	
	Flow	Cognitive	.971 ( $p=.034$ )	.012	.102	2	.051	.891	a>b
		Behavioral		.050	.067	2	.034	.163	
	Self-directed learning	Learning openness	.952 ( $p=.023$ )	.057	.445	2	.222	.587	
		Learning initiative		.037	.787	2	.394	.623	
		Learning attachment		.203	.720	2	.360	.690	
		Problem solving		.112	.790	2	.395	.672	

Note:  $p<.05$  a: 65-74 years old, b: 75-84 years old, c: over 85 years old.

As a result of the follow-up post-hoc comparison(Bonferroni) performed, it turned out that there were significant differences for the physical strength and health variables for the fun variable for those aged between 65 and 4 and those aged between 74 and 84( $p=.002$ ). As for the self-directed learning variable, it turned out that there were significant differences between those aged between 65 and 4 and those aged 74 and 4( $p=.016$ ) for the learning initiative variable, respectively.

### 3.2. Differences between fun, flow, and self-directed learning according to academic background

<Table 3> illustrates the results of the MANOVA performed to validate the differences of the variables according to the educational background. It it turned out that the educational background and fun variables(Wilk's Lamda=.923,  $p=.038$ ) and the academic background and self-directed learning variables(Wilk's Lamda=.878,  $p=.031$ ) had significant differences. It also turned out that there were no significant differences for the educational background and flow variables. Furthermore, examining the inter-individual validation effects, there were significant differences for the physical strength and health variables( $F$  value=.931,  $p=.047$ ) and the compliment variable( $F$  value=1.159,  $p=.030$ ) of the fun variable according to the educational background. Examining the self-directed learning variable according to the academic background, it turned out that the learning initiative variable( $F$  value=5.515,  $p=.000$ ) and the problem solving variable( $F$  value=2.573,  $p=.039$ ) had significant differences. As a result of the follow-up post-hoc comparison(Bonferroni) performed, there were significant differences for the compliment variable among the fun variables for the lack of education and high school diploma( $p=.000$ ). The self-directed learning variable demonstrated a significant difference for the learning initiative for the middle school diploma and college diploma or higher( $p=.013$ ), and the elementary school diploma and middle school diploma( $p=.001$ ), respectively.

**Table 3.** Results of difference in fun, flow, and self-directed learning according to academic back ground.

Variability	Dependent variable	Sub-factor	Wilks' lamda	Significance probability	Sum of squares	Degree of freedom	Mean square	F	Post-hoc
Academic background	Fun	Physical strength and health	.923 ( $p=.038$ )	.047	.687	4	.172	.931	d>a
		Compliment		.030	1.020	4	.255	1.159	
		Family support		.087	.364	4	.091	.430	
		Interpersonal relationship		.099	1.917	4	.479	1.973	
		Learning related		.131	.478	4	.120	.368	
	Flow	Cognitive	.900 ( $p=.054$ )	.105	.157	4	.039	.682	
		Behavioral		.473	.727	4	.182	.887	

Self-directed learning	Learning openness	.878 (p=.031)	.470	1.348	4	.337	.891	e>c>b
	Learning initiative		.000	12.920	4	3.230	5.515	
	Learning attachment		.198	3.131	4	.783	1.517	
	Problem solving		.039	5.884	4	1.471	2.573	

Note: p<.05. a: less than elementary school, b: elementary school graduation, c: middle School graduation, d: high school graduation, e: university graduate or higher.

### 3.3. Differences between fun, flow, and self-directed learning according to training experiences

<Table 4> illustrates the results of the MANOVA performed to validate the differences of the variables according to the training experience. The training experience and fun variables(Wilk's Lamda=.811, p=.000), training experience and flow variables(Wilk's Lamda=.785, p=.000), and the training experience and self-directed learning variables(Wilk's Lamda=.757, p=.002) all demonstrated significant differences. Furthermore, examining the inter-individual validation effects, the physical strength and health variables(F value=5.456, p=.001), compliment variable(F value=5.151, p=.002), interpersonal relationship variable(F value= 5.366, p=.001) and the learning related variable(F value=12.723, p=.000) demonstrated significant differences, while the family support variable did not demonstrate any significant difference. Among the training experience and flow variables, the behavioral flow variable(F value=3.463, p=.017) demonstrated a significant difference. As for the training experience and self-directed learning variables, the learning initiative variable(F value=1.358, p=.036) demonstrated a significant difference. As a result of the follow-up post-hoc comparison(Bonferroni) performed, among the fun variables, the learning related variable demonstrated significant differences for less than 1 year and 2 years to less than 3 years(p=.000), and 2 years and less than 3 years and 1 year and less than 2 years(p=.008). Among the flow variables, the behavioral flow variable demonstrated a significant difference for less than 1 year and 1 year and less than 2 years(p=.011), and among the self-directed learning variables, the learning initiative variable demonstrated a significant difference for 1 year and less than 2 years and 2 years and less than 3 years(p=.000), respectively.

**Table 4.** Results of difference in fun, flow, and self-directed learning according to training experiences.

Variability	Dependent variable	Sub-factor	Wilks' lamda	Significance probability	Sum of squares	Degree of freedom	Mean square	F	Post-hoc
Academic background	Fun	Physical strength and health	.811 (p=.000)	.001	2.858	3	.953	5.456	b>c>a
		Compliment		.002	3.242	3	1.081	5.151	
		Family support		.299	.773	3	.258	1.232	
		Interpersonal relationship		.001	3.768	3	1.256	5.366	
		Learning related		.000	10.708	3	3.569	12.723	

Flow	Cognitive	.785 (p=.000)	.910	.111	3	.037	.180	b>a
	Behavioral		.017	.577	3	.192	3.463	
Self-directed learning	Learning openness	.757 (p=.002)	.294	.188	3	.063	.343	b>c
	Learning initiative		.036	1.531	3	.510	1.358	
	Learning attachment		.291	.070	3	.023	.036	
	Problem solving		.337	.891	3	.297	.568	

Note: p<.05, a: less than 1 year, b: 1 year-less than 2 years, c: 2 years-less than 3 years, d: more than 3 years.

### 3.4. Differences between fun, flow, and self-directed learning according to the number of training sessions per week

<Table 5> illustrates the results of the MANOVA performed to validate the differences of the variables according to the number of training sessions. The number of training sessions and fun variables(Wilk's Lamda=.891, p=.027), number of training sessions and flow variables(Wilk's Lamda=.875, p=.002), and the number of training sessions and self-directed learning variables(Wilk's Lamda=.835, p=.040) all demonstrated significant differences. Furthermore, examining the inter-individual validation effects, there were significant differences for the physical strength and health variables(F value=1.634, p=.022) and the learning related variable(F value=4.098, p=.007) for the fun variable according to the number of training sessions. Among the number of training sessions and flow variables, the cognitive flow variable(F value=1.272, p=.013) demonstrated a significant difference. Among the number of training sessions and self-directed learning variables, the learning openness variable(F value=1.659, p=.016) demonstrated a significant difference. As a result of the follow-up post-hoc comparison(Bonferroni) performed, the physical and health variables among the fun variables demonstrated significant differences for once a week and twice a week(p=.000), while the cognitive flow variable among the flow variables demonstrated a significant difference for once a week and twice a week(p=.001). Among the self-directed learning variables, the learning openness variable turned out to have significant differences for three times a week and once a week(p=.031), and for once a week and twice a week(p=.001), respectively.

**Table 5.** Results of difference in fun, flow, and self-directed learning according to number of training sessions.

Variability	Dependent variable	Sub-factor	Wilks' lamda	Significance probability	Sum of squares	Degree of freedom	Mean square	F	Post-hoc
Academic background	Fun	Physical strength and health	.891 (p=.027)	.022	.897	3	1.299	1.634	b>a
		Compliment		.592	.423	3	.141	.636	
		Family support		.119	.235	3	.412	.986	
		Interpersonal relationship		.838	.211	3	.070	.282	
		Learning related		.007	3.807	3	1.269	4.098	
	Flow	Cognitive	.875	.013	.104	3	.035	1.272	b>a

	Behavioral	(p=.002)	.285	.779	3	.260	.604	
	Learning openness		.016	1.864	3	.621	1.659	
	Learning initiative	.835	.609	1.158	3	.386	.610	
Self-directed learning	Learning attachment	(p=.040)	.670	.814	3	.271	.519	b>a>c
	Problem solving		.369	1.855	3	.618	1.055	

Note: a: 1 time, b: 2 times, c: 3 times, d: 4 or more times.

## 4. Conclusion and Recommendations

Old age is the last phase of the life cycle, and people face various issues physically, emotionally, economically and socially. In particular, given to the digitalization of the modern society, the weakening and disconnection of the communication among family and children, health issues, separation by death, and loneliness, etc., may cause various feelings of loss in tandem with stress[18][19].

Hence, in this study, the results of the MANOVA performed to examine the relationship of influence of the demographic variables on fun and flow and self-directed learning of the senior citizens participating in Health Qigong were verified. Based on the results of the study, the fun variable, flow variable, and the self-directed learning variable demonstrated differences each according to the demographic background variable. In particular, it was evident that the demographic characteristics of age, training experience, and number of training sessions demonstrated the statistically significant differences for fun, flow, and self-directed learning. It confirmed that in terms of the operation of the Health Qigong program, it is necessary to accommodate the needs by age, experience, and number of training sessions, and also induce the senior citizens participating in the exercises to participate in the program positively through the development of the Health Qigong program towards that end.

The previous studies which claim that the subjective well-being is a most important determinant in connection with the level of health for the senior citizens have recommended that active participation be made for the physical activities as a countermeasure for the senior citizens' health interventions[20][21][22]. Furthermore, the previous studies related to the learning of senior citizens claimed that among the most fundamental ways to solve the health issues of senior citizens is the health intervention through physical activities, and it is also important to create an environment where they can participate and sustain on their own[23][24].

Hence, as in the previous studies, the results of this study demonstrate the possibility that very active physical activities and related experiences for the senior citizens for health intervention would bring about the self-directed learning through the experiences of fun and flow, which in turn might impact the improvement of the quality of life for the old age. Accordingly, based on the results of this study, Health Qigong has provided a theoretical basis which may be used for health education in leisure activities of the senior citizens. As a recommendation for the follow-up studies manifested in connection with this study, it will be necessary to conduct a study on the validation of the influence on the variables for the self-directed learning of the senior citizens participating in the Health Qigong program.

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## 6. Appendix

### 6.1. Authors contribution

	Initial name	Contribution
Lead Author	DL	-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*	JL	-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"/>
Co-Author	HK	-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/> -Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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Corresponding author\*  
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## Directions for the Introduction of a Horizontal Fiscal Equalization System for the PROTECTION of Financially Lagging Area in Korea

Sangbum Lee<sup>1</sup>

*National Association of Mayors of Korea, Seoul, Republic of Korea*

Eungyeol Na<sup>2\*</sup>

*Dongbang Culture University, Seoul, Republic of Korea*

### Abstract

**Purpose:** The purpose of this study is to address the horizontal fiscal imbalance caused by the financial decentralization of local governments in Korea, and propose a direction for the introduction of the horizontal fiscal equalization system for the protection of financially lagging area.

**Method:** To achieve the purpose of this study, the primary details of the first phase of financial decentralization were confirmed based on the theory of the financially lagging area and the horizontal mediation system. Furthermore, the regional synergistic development fund, which is a similar system currently implemented, and the direction of its introduction, were examined.

**Results:** As a result of the study, first, the fact the regional balanced distribution is very much needed through the protection of financially lagging area and the regional solidarity was confirmed. Second, to introduce the horizontal fiscal equalization system, it is necessary to provide a direction for the introduction of the system which may achieve a basic agreement among the local governments, which are direct stakeholders. Third, the form of the system is introduced as a fund, and an expansionary system's development plan based on the existing regional synergistic development fund system may be considered. Fourth, it is necessary to use the local consumption tax in terms of adequacy and stability of the financial resources and relaxing the tax revenue imbalance between the local governments in connection with the fiscal decentralization. Fifth, as for the distribution index, it is necessary to use to the farthest extent possible the variables related to population, population characteristics, per capita income, and area, which are among the variables beyond the control of local governments. Sixth, it is necessary for the principal of management to secure a sufficient size for the local government for spending the financial resources.

**Conclusion:** The horizontal fiscal equalization system ought to, first, pursue a comprehensive development of balance for the region, and second, aim to address the gap in financial power between the regions, and third, be introduced in the form of complementing the vertical financial mediation.

**[Keywords]** Financial Decentralization, Horizontal Fiscal Equalization System, Protection of Financially Lagging Area, Regional Synergistic Development Fund, Regional Solidarity

## 1. Introduction

The Korean government announced the first and second phases of fiscal decentralization in October 2018, and pursued implementing the first phase of fiscal decentralization, increasing the local consumption tax rate from 11% of the value added tax in 2019 to 21% in 2020, respectively[1][2]. In December 2019, the first phase of the fiscal decentralization was in fact completed with the passage at the National Assembly of the bills related to the first phase of fiscal decentralization, including the Local Finance Act. Now, what remains is the second phase of fiscal decentralization, and the transfer of national tax to the local governments is undergoing implementation to achieve a 70% to 30% structure of the national tax versus local tax [3].

The most acute issue of such fiscal decentralization is the fact that, following the transfer of national taxes to local governments, such as the increased local consumption tax, a disparity in the tax revenue arises between the regions, with a focus on the metropolitan areas such as Seoul and Gyeonggi, where tax sources are plentiful[4]. That is, regional differences in the size of local revenues and the benefits of national tax transfer are concentrated on large cities, and such gap in tax revenue or the controversy over the concentration of tax revenue has made the distributive structure of the first phase of fiscal decentralization to focus on the fiscal equity. The horizontal fiscal adjustment of the increased local consumption tax is accomplished in two ways.

The first of which is to set varying weights for each type of region in the consumption index to 1 for the metropolitan area(Seoul, Gyeonggi, and Incheon), 2 for the metropolitan cities, and 3 for the provinces, when the tax revenues are distributed by the local governments by applying the standard of tax collection. The second of which is to contribute 35% of the remaining local consumption taxes(4.7%, or KRW 4 trillion) for the regional synergistic development fund, excluding 5.3% of the portion of financial resources preservation for the local government transfer from the metropolitan area, and provide 50% of them to financially provide for the financially lagging area[2][4][5].

Furthermore, even during the second phase of fiscal decentralization, if the central government's functions were transferred to the local governments with a focus on the social welfare projects, how the related financial resources will be preserved will need to be articulated, while the issue of the distribution of resources between the metropolitan area and the metropolitan area, and between the metropolitan area and the primary local authority may grow into a struggle in a new context for the net increments of the transfer funds. The issue is expected to appear as a conflict of another dimension. Hence, the horizontal fiscal equalization system is undergoing discussions as a means to address the tax revenue imbalance between the regions which has emerged following the implementation of the first and second phases of fiscal decentralization[5].

Together with which, the pandemic of COVID-19 is further causing large scaled changes, such as by constricting the daily lives of local communities and residents, and reducing the provision of traditional resident services and administrative services. Local governments are now faced with an administrative environment which is entirely different from the existing social and economic order, such as contactless contact and the response with quarantine, and the local administrative operating system is exposing inconsistencies with the reality[6][7][8].

In particular, the repeated social disasters have caused serious crises for the local community, and when large scaled social crises arise, the system for preparing and overcoming them is limited in responding for the areas that are lagging or underdeveloped relative to large cities[9][10][11]. Hence, a rapid increase in the demand for public finance is expected in the future, such as quarantine measures, disaster safety, revitalization of the local economy for the regional restoration, and increase in social welfare services, and consequently, the development of a financial cooperation system by and between the local governments to help protect the financially lagging area given the low rate of birth and the aging population has emerged as an important task[12][13].

However, since the horizontal fiscal equalization system carries the basic concept of financial transfer from the local governments with plentiful financial resources to the local governments with poor resources, it is a financial system which requires understanding and discussion among the local governments with priority. That is, it is not an easy task that the values, principles and rules, financial resources, and the distribution methods, etc., of the horizontal fiscal equalization system must be rationally structured, and at the same time, a basic agreement between the stakeholders must be reached[14][15]. Accordingly, the purpose of this study is to address the horizontal financial imbalance caused by the financial decentralization, and propose the direction for the introduction of the horizontal fiscal equalization system for the protection of financially lagging area in terms of the financial governance between the local governments.

## 2. Protection of Financially Lagging Area and Horizontal Fiscal Equalization System

### 2.1. Concept of the financially lagging area

Broadly speaking, the financially lagging area is focused on the issue of gap in terms of the revenue raising capacity or the fiscal capacity of local governments, and also means the local governments which are difficult to provision for the public service cost for the local residents with such independent sources as local taxes[16][17]. Practically, as illustrated in <Table 1>, among the 243 local governments in Korea based on the 2021 budget, 230 local governments have less than 50% of their fiscal independence, which account for 94.7% of the total. The financial independence of 173 out of 243 local governments(71.2% of the total) is less than 30%, demonstrating poor financial conditions. What is noteworthy is that the number of local governments with the level of financial independence of less than 30% is continuously expanding(153 local government in 2017, 155 in 2018, 158 in 2019, 170 in 2020, and 173 in 2021) respectively[18].

**Table 1.** Distribution of the level of local financial independence(based on the 2021 budget)[18].

Division	Sum	City, province	City	County	Autonomous region
Total	243(100%)	17	75	82	69
Less than 10%	3(1.2%)	-	-	3	-
10% to less than 30%	170(70.0%)	5	42	76	47
30% to less than 50%	57(23.5%)	8	28	3	18
50% to less than 70%	10(4.1%)	3	4	-	3
70% to less than 90%	3(1.2%)	1	1	-	1
Over 90%	-	-	-	-	-

Relationship through the fiscal decentralization, but also making the efforts to continuously promote an effective local financial mediation system is needed to lead the reform of the entire local financial system based on it. Meanwhile, the financially lagging area has been reestablished as a growth promotion area in accordance with the Special Act on Balanced National Development as an area where the regional GDP and financial independence are significantly low, population continues to decline, or the local industries have rapidly declined following the changes in their economic conditions[17].

According to Article 2 of the Special Act on Balanced National Development, a growth promotion area means an area with a low level of living environment and development, which requires special consideration from the national and local governments for the construction and development of infrastructures, etc. The target area means the area jointly designated and officially announced by the Ministry of the Interior and Safety and the Minister of Land, Infrastructure and Transport[17].

As for the designation of the growth promotion area, the average annual rate of population change, level of income, financial situation, and local accessibility, etc., were combined for 159 cities and counties across the nation, and the National Balanced Development Committee selects 70 cities and counties with a high level of lagging or underdevelopment by undergoing a comprehensive evaluation every five years(designated in 2019). In the selected areas, the construction and development of the community infrastructures such as roads and water and sewage are subsidized. The indicators used for the regional selection are as illustrated in <Table 2> below.

**Table 2.** Calculation indicators for the growth promotion area[17].

Division	Indicator	Remark
Population	Population density	-
	Population change	-
Income	Total local income tax	-
	Gross regional domestic product(DRDP)	2019 supplement
Financial situation	Financial power index	-
Accessibility	Local accessibility	-
	Social overhead capital(SOC) accessibility	2019 supplement

## 2.2. Horizontal fiscal equalization system

Theoretically, in terms of the inter-governmental financial relationship, the vertical financial mediation system is one which transfers the financial resources from the central government to the local governments, whereas the horizontal fiscal equalization system is one intended for addressing the financial disparity or fiscal equity between the local governments with equal legal status[15][19]. The vertical financial mediation system arises due to a lack of tax sources for the local governments, in which event, if the central government provides an appropriate level of measures to strengthen the revenue raising capacity for each local government(subsidization for the financial equity), the horizontal fiscal balance may be achieved[14].

The horizontal fiscal equalization system carries the basic concept of financial transfer from the local governments with plentiful financial resources to the local governments with poor financial conditions. Hence, as a result of comparing local finances beyond the financial relationship between the central government and the local governments, the gap between their own revenue and fiscal expenditure means a difference arising between the local governments, and what provisions for them is called the “horizontal equalization”[20].

The financial resources for the horizontal fiscal adjustment in Korea are the local government's own resources, and there is no horizontal fiscal equalization system for the purposes of securing financial resources for such financial projects as joint investments by and between local governments. That is, within the current local finance transfer system in Korea, there is no system which is operated solely for the purposes of addressing the horizontal fiscal inequality of the local governments. However, there are the cases where some inequality mitigation effects are induced during the operation of the system. Among them are the general local share tax, metropolitan revenue sharing of self governing body, regional synergistic development fund, and the joint tax system for the City of Seoul's property tax[1][15].

Among which, the systems which are most similar to the horizontal fiscal equalization system are the City of Seoul's joint tax for self governing body and the regional synergistic development fund. The former is a horizontal fiscal equalization system between the local governments, and 50% of the property tax collected within the self governing body is jointly created as a special municipal property tax, and the total 25 self governing bodies of the City of Seoul are equally distributed according to the 1/25 formula. The joint property tax system of the City of Seoul is difficult to consider as a horizontal fiscal equalization system in its complete sense due to its locality and incompleteness, yet it may be evaluated as having some characteristics of the horizontal financial adjustment in the regional unit[6].

Meanwhile, in the case of the regional synergistic development fund as a horizontal fiscal equalization system between the metropolitan governments, the Ministry of Public Administration and Security has in fact implemented the horizontal fiscal adjustment with a view to address the fiscal imbalance caused by transferring a portion of the national value added tax to the local taxes. While the regional synergistic development fund carries the characteristics of

the horizontal fiscal equalization system which promotes the fiscal equity to some extent, it is somewhat difficult to consider it as the horizontal fiscal equalization system discussed in financial theory given the small size of the financial resources[21][22].

**Table 3.** Korea's vertical and horizontal local finance adjustment system[14].

Classification			Direction of addressing the financial imbalance	
			Horizontal financial equalization	Vertical financial equalization
Inter-governmen- tal financial transfers	Purpose of equaliza- tion/ addressing financial imbalance	Income equaliza- tion	- Joint taxation of property tax by the city of Seoul (locally limited function) - Regional synergistic development fund(minimal)	- Absent in fact, yet partially carried out by local revenue sharing and metropolitan revenue sharing of self governing bodies
		Cost equaliza- tion	None	- Local revenue sharing tax - Local transfer of finance for education - Metropolitan revenue sharing - Government subsidy (differentiated rate of subsidy)
	Non-equalization		- Transfer of local educational finances(transfer of finances from cities and provinces to the office of education of cities and provinces) - A kind of simple general subsidy	- Government subsidy, non-subsidy of cities and provinces(limited) - Excluded from the subject of application for the differentiated rate of subsidy

### 3. Phase 1 of the Financial Decentralization and the Regional Synergistic Development Fund

#### 3.1. Overview of the phase 1 of the financial decentralization

<Table 4> below illustrates the details of the regional synergistic development fund according to the first phase of financial decentralization. In the first phase of financial decentralization, 10% of the national value added taxes are transferred to the local consumption tax, and KRW 8.5 trillion of the increase, ①KRW 3.6 trillion were intended for the functional transfer and preservation, ②KRW 0.9 trillion for the metropolitan revenue sharing and transfer adjustments, and ③4.7%p of the remaining local consumption tax(KRW 4.0 trillion) are weighted by region(1 for the Seoul metropolitan area : 2 for metropolitan city : 3 for province 3), and 35% of the regional synergistic development fund for the Seoul metropolitan area(Seoul, Gyeonggi, and Incheon) were promoted in the form of contribution, respectively. As for the size of and deadline for the transfer of function, the amount of preservation and adjustment is to be set at a fixed amount for 3 years(KRW 3.6 trillion + KRW 0.9 trillion), then set to sunset [2][4][5][15].

Examining in greater detail, first, as for the preservation of functional transfer, a conversion project management account was created in the regional synergistic development fund to contribute KRW 3.6 trillion, and how much of the actual budget for the transfer project was formed was investigated, and the results were reflected and distributed accordingly. Second, as the metropolitan revenue sharing and transfers for education were excluded from the calculation of the metropolitan revenue sharing, etc., of KRW 2.8 trillion for the preservation portion of the cities and provinces, the reduced metropolitan revenue sharing and the transfers for education were directly compensated for by the primary local authority and the Office of Education. Third, the residual local consumption tax was weighted(1:2:3) and 35% of the increment of the local consumption tax for the metropolitan area were contributed to the regional synergistic development fund, 50% is operated with the financial support account, and 50% as the loan management account.

**Table 4.** Regional synergistic development fund following the first phase of the financial decentralization.

Preservation of the transfer of function (KRW 0.8 trillion)	Preservation of the transfer of function (KRW 2.8 trillion)	Metropolitan revenue sharing (KRW 0.8 trillion)	Transfer of education (KRW 0.1 trillion)	1:2:3 applied(KRW 4.0 trillion) + contribution of mutual growth fund
① Portion of the preservation of the transfer of function (KRW 3.6 trillion/fixed amount)		② Portion of adjustment (KRW 0.9 trillion/fixed amount)		③ Remaining consumption tax (4.7%p)

### 3.2. Regional synergistic development fund as a horizontal fiscal equalization system

The regional synergistic development fund aims to form the financial resources by contributing a portion of the local consumption taxes from the 3 metropolitan areas, address the inter-regional financial gap in the distribution process, and promote the mutual growth and development by and between the metropolitan areas and the non-metropolitan areas. The initial financial resources of the fund were prepared by contributing 35%(estimated at KRW 3.5 trillion) of the total local consumption taxes of the metropolitan area for 5% of value added taxes for 10 years from 2010, respectively[22][23].

The contribution made towards this end was ended in 2019. From 2020, 35% of the portion for self governing bodies of the metropolitan area such as Seoul, Gyeonggi, and Incheon are contributed again for 10 years from among the remaining local consumption taxes, which arose from the first phase of financial decentralization. Legally, it is possible to mobilize the financial resources such as the income from the issuance of local bonds, contributions from self governing bodies, and the contributions made from public interest entities other than the contribution made from the local consumption taxes. At the beginning of the fund's establishment, there were the financial support account and the loan management account only.

Until 2014, all contributions were distributed to the local governments, and from 2015, 50% of the financial resources and 50% of the financial support were separated and accumulated as a fund for the purposes of financing local development projects. In 2020, a conversion project management account was created as one for the advance deduction of KRW 3.6 trillion for the subsidized project for the special accounting transferred to the local governments. The conversion project management account is further divided into the city and province account(KRW 2.8 trillion) and the city, county, and district account(KRW 0.8 trillion) based on the local transfer projects[15][24]. As for the regional synergistic development fund, 35% of the local consumption taxes of the local governments of the self governing bodies of the metropolitan area are the fund's source, and hence, the horizontal fiscal adjustment means the adjustment made between the metropolitan area and the non-metropolitan areas. The horizontal financial adjustment is also made via the financial support account.

### 3.3. Regional synergistic development fund as a horizontal fiscal equalization system

#### 3.3.1. Identity issue as a fund

The regional synergistic development fund is primarily used for the acquisition of local bonds and financial support, yet issues may also arise for the identity of the fund since there are mixed views for various purposes, such as a local revenue sharing to reduce the gap in tax revenue between the regions, and the financial resources for a balanced development of the metropolitan area and the non-metropolitan area[15]. Furthermore, despite such a purpose, the regional synergistic development fund was limited to the financial support account from its introduction in 2010 to 2014, and the amount in full was provided to all local self governing bodies for the purposes of job creation, and the fund did not accumulate over this period and instead was exhausted. The regional synergistic development fund, which has been procured every year

since 2015, is allocated 50% each to the financial support account and the loan management account, and is also used to acquire the local bonds. Hence, it is necessary to articulate and specify the purpose of the regional synergistic development fund further, such as by strengthening the function of the horizontal fiscal equalization via financial support or by strengthening the function of local funding via the strengthening of the loan management function.

### **3.3.2. Smallness of the financial contribution**

As the financial resources for the contribution of the regional synergistic development fund, cities and provinces of the metropolitan area, such as Seoul Metropolitan City, Incheon Metropolitan City, and Gyeonggi Province, are supposed to contribute 35% of the local consumption taxes. From 2020, 35% of the portion for the self governing bodies of the metropolitan area from the remaining KRW 4 trillion of the local consumption taxes generated from the first phase of fiscal decentralization ought to be contributed for 10 years by 2029. The size of the financial resources for contribution for 2020 is approximately KRW 442.2 billion, of which 50% are accumulated via the loan management account, and 50% are accumulated via the financial support account.

Hence, the financial resources used substantially for the horizontal fiscal equalization fund are 50% of the contribution, whose amount may be said to be KRW 221.1 billion. As for 2020, the level of resource distribution is KRW 24.7 billion for Gwangju, KRW 21.5 billion for Ulsan, KRW 19.5 billion for Daegu, KRW 16.7 billion for Jeonnam, and KRW 16.4 billion for Gyeongbuk, etc., respectively. The contribution for the regional synergistic development fund would be from KRW 400 billion to KRW 500 billion in the future, yet the size of distribution to the local self governing bodies is merely approximately KRW 15 billion on average(excluding the metropolitan area) for 17 cities and provinces, and since it may be said that the amount is absolutely inadequate as the financial resources for the regional equalization or for the achievement of regional development, the size of the contribution is small at best[22][23].

### **3.3.3. Instability of the funding method for the contribution resources**

In order for the regional synergistic development fund to attain the status worthy of its name, above and beyond everything, it ought to be able to faithfully procure the financial resources, and towards this end, expanding the venues to procure them will need to be explored. That is, considering the purpose of the regional synergistic development fund, etc., it is necessary to review how to expand the fund's financial resources in the manner which increases other financial resources along with the contribution from the cities and provinces of the metropolitan area. For instance, the regional synergistic development fund ought to contribute the financial resources to the non-metropolitan area in order to secure the fiscal responsibility of the non-metropolitan area, thereby strengthening the function of the horizontal financial solidarity between the financially affluent area and the financially lagging area[24].

## **4. Direction for the Introduction of a Horizontal Fiscal Equalization System**

### **4.1. Protection of financially lagging area and the regional solidarity**

The financial decentralization for the countries of decentralization of power ought to avoid making an approach with a residual financial support which provides a small amount of financial support for the local governments with weak financial power. This is because wealthy regions with plentiful local tax sources have intensified the regional imbalances of local finances the central government's adjustment, which in turn may favor the central government centric decision-making according to regional financial interests[15]. Hence, the difference in the revenue generating capacity due to the inequality of tax sources between the regions and the issue of

financial imbalance due to the financial demand by region requires that the relatively and advantageously wealthy regions actively achieve the regionally balanced distribution through the regional solidarity in the financially lagging area, and towards this end, the financially affluent regions ought to take the lead in making contribution to the fund and participation in its operation.

## **4.2. Direction of the Introduction**

### **4.2.1. Policy feasibility**

The horizontal fiscal equalization system in principle needs to explore venues at a level which other local governments may accept within the scope which does not deviate from the common framework for the local financial support. The need for the horizontal fiscal adjustment has been recognized in terms of addressing the fiscal gap which exists between the regions, and the policy focus is usually placed on relaxing the gap in the revenue generating capacity rather than the gap in the expenditure between the regions[9]. However, due to the vertical financial mediation system such as the local revenue sharing and the metropolitan revenue sharing, the fiscal gap between the regions has significantly been reduced at the revenue level, and consequently, the serious inter-regional financial disparity is largely reduced in the phase of fiscal spending. Hence, rather than introducing an active and powerful horizontal fiscal equalization system which mobilizes the large scaled financial resources, it is necessary to establish a direction for the introduction of system which may help achieve a basic agreement without large conflicts and confrontations among the local governments, which are the direct stakeholders[25].

### **4.2.2. Form of the system**

The horizontal fiscal equalization system may be discussed across various forms, yet in this study, it is considered to be desirable to operate the system in the form of a fund. This is because the principal of the fund is the local government. In which event, this system may be divided into the plan of building an expansionary system based on the existing regional synergistic development fund system and the plan of building in the form of a new fund system[15][26]. The regional synergistic development fund system is the only horizontal financial transfer system which transfers finances between the 3 metropolitan self governing bodies and other metropolitan governments with local resources at the national level, and also has reasonableness and utility. The establishment of a new system may be approached with the awareness that the new function of local finance is further strengthened in order to seriously perceive the reality of the gap in financial power between the local governments and emphasize the social imperative and rationality to correct it accordingly.

### **4.2.3. Contribution resources**

The larger the total amount of the financial resources for contribution, and the higher the proportion of the distribution methods such as the extent of regional lagging or underdevelopment is applied, the higher the function of the horizontal financial adjustment(the function of equalization). Hence, specifying the total amount of the financial resources for contribution ought to be carried out in advance, and the direction of the system operation may be established depending on how and what financial resources are managed[27]. Considering the purpose of the system, in order to avoid the inconsistency of the purpose of the equalization fund due to the small size of the financial resources, the financial resources for contribution may be subjected to the local income tax and local consumption tax, which are large in size and secure in terms of the tax revenue. When the horizontal financial adjustment system is introduced as a measure to address the tax revenue imbalance between the regions which may emerge in connection with the second phase of financial decentralization, it would be necessary to use the transferred local consumption tax. This is not because of the local tax collection efforts or

the tax productivity, yet because there is an inequality in the tax revenue between the local governments which have relatively large revenue sources and the local governments which have small revenue sources[14][28].

#### **4.2.4. Distribution indicator**

As for the distribution index of the horizontal fiscal equalization system, examining the cases of the OECD countries[25], the results of the financial equalization measures tend to redistribute the financial resources from the urban areas to rural areas, and the cost equalization(cost equalization based on geographic indexes) also tends to develop in a direction favorable for the rural areas. As an exception, in the case of the Netherlands and the United Kingdom, and as a result of actively reflecting the social and economic demands, a phenomenon where the financial resources are distributed in a direction favorable for the urban areas has emerged. This is because the causes of the difference in the supply cost of public services between the regions are geographical location and characteristics, regional size and the size of population, density of population(concentration), demographic changes and trends, path dependency following economic shock, and the level and status of welfare, etc.[25]. Hence, the distribution index of the horizontal financial adjustment system needs to use the variables which cannot be controlled by the local governments, such as population, demographic characteristics, per capita income, area, topography, and climate related variables to the extent possible to address such problems.

#### **4.2.5. Method of management and operation**

The horizontal fiscal equalization system ought to carry the form by which finances are exchanged horizontally between the local governments at the same level according to certain standards and methods, while the financial resources must be procured based on the local financial resources rather than the national financial resources, and hence, the principal of management ought to be carried out by the local government which is spending the financial resources. As for the management and operating system of this system, there are ① a plan via the establishment of a fund management committee, ② a plan to establish and operate a special local self governing body under the Local Autonomy Act, and ③ a plan to maintain the form of cooperatives such as the existing regional synergistic development fund[24].

Furthermore, as for the account structure of the fund, the roles and financial resources of the regional and primary may be divided, and the plan to operate it separately via ① the metropolitan account and ② the primary account, and the plan to use the resource distribution structure focused on metropolitan self governing bodies such as the existing regional synergistic development fund may be reviewed. In addition, it is desirable that the financial resources be used as the general financial resources when the horizontal fiscal equalization system is installed for the purposes of addressing the revenue imbalance caused by the second phase of fiscal decentralization. However, as the general financial resources, it would be necessary to secure an adequate size of the financial resources for contribution, and it is also necessary to review the designation of the comprehensive purpose of business in connection with the expenditures[14][15].

## **5. Conclusion**

The purpose of this study is to present a direction for the introduction of the horizontal fiscal equalization system to help reduce the fiscal gap for the protection of the financially lagging area, and build a collaborative fiscal governance in line with the promotion of financial decentralization. Towards this end, the theory of the financially lagging area and the horizontal mediation system, key details of the first phase of financial decentralization, and the regional synergistic development fund as a similar system in Korea have been examined. The horizontal

fiscal equalization system ought to, first, pursue a balanced and comprehensive development of the region, and second, aim to address the inter-regional financial gap, and third, be introduced in the form of complementing the vertical financial mediation system. First of all, under the goal of the comprehensive and balanced regional development, the system does not bind the projects subject to support in advance, and also needs to pursue the general financial resources or the block grants mutually by and between the self governing bodies operating in the form of a fund, which allows for a comprehensive use of the regional development [29].

Together with which, the horizontal fiscal equalization system ought to perform the function of addressing the fiscal gap by strengthening the horizontal financial solidarity between the financially affluent regions and the financially lagging or underdeveloped regions. At which time, the value of regional solidarity for the protection of financially lagging area is very important. This is because the policy decisions lacking such value and the distribution of financial resources made favorable for the financially affluent organizations would yield very acute conflicts and struggles between the stakeholders. Lastly, the horizontal fiscal equalization system is not a substitute for the vertical financial mediation system [30]. In terms of the fiscal decentralization, the vertical financial mediation system ought to be first reorganized with a focus on the transfer of national taxes to the local governments, while the horizontal fiscal equalization system must be introduced as a complement to address the inter-regional fiscal gap as a result of the financial decentralization.

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## 7. Appendix

### 7.1. Authors contribution

	Initial name	Contribution
Lead Author	SL	-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*	EN	-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
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