

Lifestyle changes and perceived restrictions in daily life during the COVID-19 pandemic:

Analysis of the 2020 Community Health Survey data

Inmyung Song

Associate professor, Department of Health Administration, Kongju National University

COVID-19 팬데믹 시기 라이프스타일 변화와 일상생활 제한인식: 2020년 지역사회건강조사자료 분석

송인명

공주대학교 보건행정학과 부교수

Abstract This study aims to examine the extent of lifestyle behavior changes, perceived restrictions in daily life, and their relationship during the COVID-19 pandemic. Using the 2020 Community Health Survey data, this study calculated perceived restrictions in daily life among adults in Korea during the pandemic by sociodemographic characteristics and lifestyle behavior category (physical activity, sleeping duration, drinking, smoking, social contact, public transport use, food delivery, instant food consumption). The generalized linear model examined the relationship between behavior change and perceived restriction on daily life. A total of 227,808 respondents were analyzed. 56.70% of the population perceived their daily lives restricted by 50% and more during the pandemic. The majority of the population decreased physical activity, social contact, and public transport use (52.71%, 89.70%, and 63.74%, respectively). Individuals who decreased physical activity, sleep duration, and social contact frequency, and those who increased drinking frequency, food delivery, and instant food consumption perceived greater restrictions in daily life than those who did not change respective behaviors ($p < 0.001$). In conclusion, decreases in social contact and physical activity and increases in use of food delivery and instant food consumption were associated with greater perceived restrictions of daily life during the pandemic. Efforts to alleviate the negative impact of the pandemic on psychological well-being may need to involve attempts to improve healthy life behaviors.

Key Words : COVID-19, Pandemic, Daily life, Lifestyle, Behavioral change

요약 본 연구는 COVID-19 팬데믹 기간 동안 라이프스타일 행동변화 정도, 일상생활 제한인식, 그리고 그 관계를 파악하고자 하였다. 2020년 지역사회건강조사를 이용하여, 한국 성인들이 팬데믹 기간 동안 사회인구학적 특성 및 라이프스타일 행동 범주(신체적 활동, 수면기간, 음주, 흡연, 사회적 접촉, 대중교통수단 이용, 음식배달, 인스턴트음식 소비) 별로 일상생활의 제한인식 정도를 산출하였다. 일반화선형모형을 이용하여 행동변화와 제한인식간의 관계를 분석하였다. 총 227,808명의 조사대상자 중 56.70%가 팬데믹 기간 동안 자신들의 일상생활이 절반이상 제한받았다고 응답하였다. 대부분의 응답자들은 신체적 활동, 사회적 접촉, 대중교통 이용을 감소시켰다(각각 52.71%, 89.70%, 63.74%). 신체적 활동, 수면시간, 사회적 접촉의 빈도를 줄이거나 음주빈도, 음식배달 및 인스턴트 식품섭취를 늘린 개인들은 그렇지 않은 사람들에 비해 일상생활에 대해서 보다 더 제한받았다고 인식하였다($p < 0.001$). 결론적으로 사회적 접촉과 신체적 활동의 감소 및 배달음식 이용 및 인스턴트 음식 소비의 증가는 팬데믹 기간 중 일상생활에 대한 제한 인식의 증가와 유의한 관련성이 있었다. 팬데믹 기간 동안 사람들이 느낄 일상생활에 대한 부정적인 심리적인 영향을 줄이기 위한 노력은 건강한 라이프스타일 행동을 증진하기 위한 노력을 수반해야 할 수 있다.

키워드 : COVID-19, 팬데믹, 일상생활, 라이프스타일, 행동변화

*Corresponding Author : Inmyung Song(inmyungs@gmail.com)

Received May 26, 2022

Revised July 22, 2022

Accepted August 20, 2022

Published August 28, 2022

1. Background

The corona virus disease-2019 (COVID-19) pandemic has led to widespread intervention measures to limit the spread of the virus, such as social distancing, school closure, and isolation at home [1]. Triggered by implementation of the measures as well as for fear of transmitting the infection, people across countries adapted to the new challenging life situations by modifying their behaviors: they avoided physical contacts [2] and changed their lifestyles, such as diet and physical activity [3]. Behavioral risk factors, such as physical inactivity, smoking, and alcohol consumption, have been predominantly examined in relation to the risk of non-communicable diseases but received renewed attention in association with the risk of infectious diseases in the wake of the COVID-19 pandemic [4]. While modification of lifestyle behaviors appears to be widespread in the general population [1], individuals with high risk for the novel virus may have been more susceptible to behavioral changes. For example, older adults with chronic disease in Korea increased times spent at home due to social distancing guidelines and changed their exercise and dietary habits [5].

All these changes arising from the pandemic have potential impacts on psychological well-being of individuals. Unsurprisingly, close attention was paid to mental health of people living during the COVID-19 pandemic [6-8]. Limitations of in-person contact with people, restriction on movement, and resulting monotony of life were all cited by major sources of great suffering, according to a qualitative study [9]. A majority of people across countries felt their daily lives were affected by restrictions imposed by the governments to contain the pandemic [10]. Being confined due to a stay-at-home order in the United States [7]

and lifestyle changes such as poorer diet and physical inactivity in the U.K. and Ireland [6,8] during the COVID-19 pandemic were associated with negative emotions including anxiety, depression, anger, and loneliness. A decrease in physical activity in response to COVID-19 mitigation strategies in the U.S. was associated with higher levels of stress [11]. Depression and anxiety symptoms were psychological correlates of pandemic-induced lifestyle changes, according to a survey in 59 countries [1].

Pandemic-induced changes in behaviors and psychology, however, do not appear to be entirely negative. While the frequency of social, leisure, and educational activities decreased during the pandemic compared to the pre-pandemic era, people derived more satisfaction from each activity [12]. Some people have regarded the public health crisis as a time to build more intense relations with others, and search quietness and meaning in life [13]. Moreover, COVID-19 had a positive effect on behaviors: people are heeding pleas of public health professionals to take preventive measures [14]. Heavy drinking and drunkenness are down among U.S. college students [15].

Given that the impacts of the COVID-19 pandemic on psychology are found to be equivocal, it is worthwhile to analyze how people perceived their new life circumstances. An understanding of changes in perceptions of daily life can inform intervention policies to improve the psychological well-being of people living under the public health crisis. While numerous studies documented the prevalence of lifestyle changes and the psychological impact of the COVID-19 pandemic, little is known in the Korean population. Therefore, using nationwide survey data, this study aims to evaluate the prevalence of lifestyle changes in the Korean population aged ≥ 19 years and to

assess how restricted individuals perceived their daily lives were during the pandemic as compared to before the pandemic, and to identify factors influencing perceived restrictions in daily life.

2. Materials and Methods

2.1 Data

This study used the 2020 Community Health Survey (CHS) in Korea [16]. CHS is a nationally representative survey for adults aged 19 years and older using a complex survey design [17]. Administrative areas were cluster sampled using residential type as a stratification variable and a sample of households within each area were selected using systemic sampling. Household members aged 19 and older were interviewed. The 2020 CHS was conducted from August 16th to October 31st. A total of 229,269 individuals completed the survey.

The 2020 CHS included a set of questions regarding perceived changes in daily life during the COVID-19 pandemic as compared to before the pandemic. Respondents were asked to rate their current state on a scale ranging from 0 to 100 with an increment of 10, where 100 represents pre-pandemic life and 0 the complete stop of daily life. This current study analyzed data for 227,808 individuals who answered this question about perception of daily life during the COVID-19 pandemic. The number given by the respondent was subtracted from 100 to calculate the score of perceived restriction in daily life. Respondents in the 2020 CHS survey were also asked to indicate if they have increased, decreased, or did not change each of eight specific lifestyle behaviors. These behaviors comprised physical activities, such as walking and exercising, sleep duration, consumption of instant food (i.e., preprocessed

food) and carbonated drinks, use of food delivery, drinking, smoking, frequency of contacts with friends and neighbors, and use of public transport.

The CHS collects a number of sociodemographic variables, eight of whom were considered for this analysis: sex, age, living alone or not, educational level, marital status, employment type, and whether one is a recipient of basic livelihood security (i.e., cash assistance to the poor). Educational level was grouped into three categories (up to middle school, high school, college and higher). Marital status was categorized into currently married, ever-married, and never-married. The ever-married status is defined as having been married but being no longer in the current marital status for reasons of divorce, separation, and widowhood. Employment type was added as an explanatory variable for it can influence behaviors and perceptions of daily life on its own, not just by way of providing livelihood. The variable was categorized into the self-employed, salaried, and economically inactive.

2.2 Statistical analysis

The distribution of perceived restriction scores in daily life was obtained for descriptive analyses. First, the number of respondents was calculated from the sample. The sample frequency was then weighted by sampling weights, which were basically the inverse of selection probability in complex survey data, to estimate the population frequency and percentage [18].

The number of respondents in the sample, weighted estimate in the population, and perceived restriction in daily life were calculated by sociodemographic characteristics and by lifestyle behavior status category. The mean and standard error (SE) were calculated for perceived restriction in daily life. The t-test and

analysis of variable (ANOVA) were used to test differences in perceived restriction in daily life between and among categories. The generalized linear model (GLM) was used to examine the relationship between lifestyle behavior status and perceived restriction on daily life. The dependent variable is the score of perceived restriction on daily life. Independent variables in model 1 comprised sociodemographic variables. Model 2 added lifestyle behavior variables. Age was entered as a continuous variable. Dummy variables were created for all categorical variables. The reference value was set as the value representing no change of behavior. R^2 was obtained as a goodness of fit measure. SAS version 9.4 (Cary, NC, USA) was used for all statistical analyses. The Institutional Review Board of Kongju National University approved the study protocol and waived the

informed consent (KNU_IRB_2022-002).

3. Results

A total of 227,808 respondents were analyzed (as shown Table 1). Taken together, 56.70% of the population were estimated to have perceived their daily lives restricted by 50% and more. Women reported greater restrictions in daily life than men (mean = 48.55 vs 44.77, $p < .001$) (as shown Table 2). Perceived restrictions in daily life peaked in the 30 - 39 years age group (mean [\pm SE] = 49.59 [\pm 0.17], $p < .001$). Respondents living with others and non-recipients of basic livelihood security reported greater restrictions than their counterparts ($p < .001$). Respondents with college or higher education, the currently married, and the self-employed perceived the greatest restrictions in their respective category.

Table 1. Distribution of perceived restriction in daily life during the COVID-19 pandemic

Perceived restriction in daily life	No. of respondents	Population estimate	% (weighted)
0	1,564	1,161,195	3.83
10	11,245	782,822	4.11
20	23,944	4,191,381	9.67
30	30,685	5,829,217	3.45
40	26,796	5,309,710	12.25
50	58,375	11,217,793	25.88
60	18,392	3,719,378	8.58
70	23,552	4,998,583	11.53
80	11,480	2,451,920	5.66
90	6,534	1,429,173	3.30
100	4,241	757,419	1.75
Total	227,808	43,348,592	100.00

No. of respondents is the frequency in the sample. Population estimate and % are obtained by weighting the sample frequency with weights from complex survey data.

Table 2. Sociodemographic characteristics of study subjects and perceived restriction in daily life

Variable	Category	No. of respondents	% (weighted)	Mean perceived restriction	SE	p -value
Total		227,808		46.68	0.07	
Sex	male	103,391	49.59	44.77	0.09	<.001
	female	124,417	50.41	48.55	0.09	
Age group, years	19 - 29	26,108	17.02	46.92	0.16	<.001
	30 - 39	25,228	16.01	49.59	0.17	
	40 - 49	35,845	19.20	47.74	0.14	
	50 - 59	44,451	19.91	46.20	0.14	
	60 - 69	44,817	14.48	46.33	0.16	
	\geq 70	51,359	13.38	42.45	0.16	
Living alone	yes	35,588	12.25	45.17	0.17	<.001
	no	192,208	87.75	46.89	0.08	

Table 2. Continued

Variable	Category	No. of respondents	% (weighted)	Mean perceived restriction	SE	p-value
Marital status	currently married	149,619	63.25	47.16	0.08	<.001
	ever married	37,852	11.84	44.72	0.17	
	never married	40,218	24.91	46.38	0.13	
Educational level	up to middle school	77,779	20.45	44.36	0.13	<.001
	high school	77,932	37.45	47.00	0.11	
	college & higher	71,838	42.10	47.53	0.10	
Employment type	self-employed	40,619	14.12	47.88	0.16	<.001
	salaried	88,777	46.19	45.54	0.09	
	economically inactive	98,162	39.69	47.58	0.11	
Basic livelihood security	yes	8,975	3.41	44.50	0.39	<.001
	no	218,789	96.60	46.75	0.07	

No. of respondents is obtained from the sample. % and perceived restriction are population estimates. p-values were obtained from the t-test and the ANOVA test.

The majority (52.71%) of the population reduced the amount of physical activity during the pandemic compared to the pre-pandemic era (as shown Table 3). Social contact, use of public transport, and drinking frequency have decreased in 89.70%, 63.74%, and 45.38% of the population, respectively. Food delivery use and instant food consumption have increased in 43.65% and 23.89%, respectively. Most (78.55% and 71.37%) of the population did not alter

sleep duration and smoking frequency, respectively. There were significant differences in perceived restrictions in daily life across categories for all lifestyle behaviors ($p < .001$). In all lifestyle categories, respondents who did not change their behaviors perceived less restrictions in daily life than those who either increased or decreased respective behaviors during the pandemic.

Table 3. Changes in lifestyle behaviors and perceived restriction in daily life during the COVID-19 pandemic

Variable	Category	No. of respondents	% (weighted)	Mean perceived restriction	SE	p-value
Physical activity	increased	11,706	6.03	46.54	0.27	<.001
	no change	101,789	41.26	41.34	0.10	
	decreased	96,623	52.71	51.30	0.09	
Sleep duration	increased	23,348	11.99	52.16	0.19	<.001
	no change	185,047	78.55	44.93	0.08	
	decreased	19,396	9.46	54.20	0.21	
Drinking frequency	increased	7,523	6.91	54.84	0.31	<.001
	no change	62,337	47.71	45.30	0.12	
	decreased	52,536	45.38	47.44	0.12	
Smoking frequency	increased	3,967	8.88	55.33	0.46	<.001
	no change	35,636	71.37	44.64	0.15	
	decreased	10,130	19.75	45.70	0.29	
Social contact frequency	increased	704	0.31	43.95	1.15	<.001
	no change	27,697	10.00	36.52	0.20	
	decreased	186,750	89.70	47.91	0.07	
Public transport use	increased	1,416	1.44	45.62	0.76	<.001
	no change	38,334	34.82	43.28	0.15	
	decreased	78,072	63.74	48.49	0.11	
Food delivery use	increased	46,569	43.65	50.61	0.12	<.001
	no change	64,218	46.55	44.54	0.11	
	decreased	15,387	9.80	46.70	0.25	
Instant food consumption	increased	27,472	23.89	52.31	0.16	<.001
	no change	98,217	64.33	45.15	0.10	
	decreased	19,829	11.79	46.78	0.22	

No. of respondents is obtained from the sample. % and perceived restriction are population estimates. p-values were obtained from the ANOVA test.

The results of multiple regression analyses showed that perceived restrictions in daily life were greater in women and decreased with older age ($p < .001$) (as shown Table 4). Perceived restrictions were greater in people who were currently married or ever-married than those who have never been married ($p < .001$ in Model 1; $p < .05$ in Model 2). Perceived restrictions increased with greater educational attainment ($p < .001$ in Model 1). Self-employed and economically inactive people perceived greater restrictions than salaried workers ($p < .001$). Non-recipients of basic

livelihood security perceived greater restrictions than recipients ($p < .01$ in Model 2). Individuals who decreased physical activity, sleep duration, and social contact perceived greater restrictions in daily life than those who did not change corresponding behaviors ($p < .001$). Individuals who increased drinking frequency, food delivery use, and instant food consumption perceived greater restrictions in daily life than those who did not change corresponding behaviors ($p < .001$). Those who decreased smoking frequency perceived less restrictions than those who did not change ($p < .01$).

Table 4. Models for perceived restriction in daily life during the COVID-19 pandemic

Variable (reference)	Category	Model 1		Model 2	
		B	SE	B	SE
Sociodemographic characteristics					
Sex (male)	female	3.64***	0.10	3.59***	0.54
Age		-0.17***	0.00	-0.08***	0.02
Living alone (no)	yes	0.79***	0.16	-0.41	0.57
Marital status (never married)	currently married	4.37***	0.15	1.82**	0.58
	ever married	2.95***	0.22	2.08*	0.90
Education level (up to middle school)	high school	0.87***	0.15	-0.65	0.74
	college & higher	1.24***	0.16	-1.47	0.76
Employment status (salaried)	self-employed	3.57***	0.15	2.70***	0.58
	economically inactive	3.04***	0.11	2.47***	0.47
Basic livelihood security (yes)	no	0.63*	0.27	2.83**	1.06
Lifestyle behavior (no change)					
Physical activity	increased			1.27	0.92
	decreased			6.48***	0.42
Sleeping duration	increased			4.00***	0.59
	decreased			4.88***	0.73
Drinking frequency	increased			5.02***	0.87
	decreased			0.76	0.44
Smoking frequency	increased			1.50	0.76
	decreased			-1.70**	0.52
Social contact frequency	increased			2.80	2.07
	decreased			5.85***	0.58
Public transport use	increased			-2.74	1.42
	decreased			0.76	0.41
Food delivery use	increased			1.85***	0.49
	decreased			0.74	0.79
Instant food consumption	increased			2.48***	0.55
	decreased			-0.47	0.74
Constant		46.70***	0.37	33.54***	1.57
R ²		0.0216		0.0955	

* $p < .05$; ** $p < .01$; *** $p < .001$.

4. Discussion

Using nationwide survey data, this study showed that adults in Korea modified their lifestyle behaviors during the COVID-19 pandemic compared to the pre-pandemic times. In particular, the majority of individuals decreased the frequency of social contact, use of public transport, and physical activity. The most pronounced change was observed in how often people interacted with other people. Almost nine out of ten individuals reported to have decreased the frequency of social contact with friends and neighbors. The marked shift in social behavior might have contributed to a decrease in drinking frequency and an increase in use of food delivery, which were also observed in a substantial proportion of the population in the current study.

The observed behavioral changes were associated with how restricted people perceived their daily lives to be by the pandemic. In all lifestyle behavior categories, the magnitude of perceived restrictions in daily life was greater among respondents who changed their behaviors (by either increasing or decreasing) than those who did not. The results of the multiple regression analysis confirmed that individuals who increased the use of food delivery and instant food consumption perceived greater restrictions in daily life than those who did not change respective behaviors. Likewise, individuals who decreased the amount of physical activity, sleep duration, and social contact frequency perceived greater restrictions in daily life than those who maintained pre-pandemic lifestyle behaviors.

Consistent with the findings of this study, the COVID-19 pandemic and ensuing changes in lifestyle behaviors were shown to have influenced emotional well-being of individuals across the globe [1,6,8]. In Korea, restrictions in

daily life were found to be associated with the risk of anxiety and depression during the pandemic [19]. The findings of this current study and earlier ones suggest that unhealthy lifestyle changes can have a potential impact on physical and mental health of individuals who confronted the pandemic. This further suggests that lifestyle changes brought on by the pandemic can be ameliorated by efforts to change the perception of risks of the COVID-19, and that efforts to reverse the behavioral changes incurred by the pandemic may also alleviate the negative perceptions of daily life during the pandemic.

The present study showed that perceived restrictions of daily life were associated with demographics variables such as age and gender, which may influence risk perception of COVID-19. Women perceived greater restrictions in daily life than men did. Similarly, there was earlier evidence of a gender difference in the perception of COVID-19 as a serious health problem and compliances with public policy measures to contain the spread of the virus [20]. Women were more stressed [21] and felt more loneliness during the outbreak [22]. In the present study, perceived restrictions decreased with advancing age. Consistent with the finding of this study, young adults were more vulnerable to the COVID-19-related stress and life changes than older adults in the United States and Canada [23,24]. One probable reason for age-associated difference is that young individuals may have perceived relative inefficacy when coping with the unprecedented public health crisis [24].

Perceptions of restrictions in daily life during the pandemic were also influenced by other socioeconomic variables. People who have been married perceived greater restrictions in daily life than those who have never been married.

This may be attributable to disruptions in patterns of family life induced by the pandemic. COVID-19 induced lockdowns led to a substantial spousal reallocation of household chores, according to a survey of Italian, British, and American families [25]. Higher educational attainment was also associated with greater restrictions in daily life in Model 1 of this study. This is contrary to the findings that people with lower levels of education in other countries felt more stress during the pandemic [21] and experienced unhealthier changes in diet, sleep, and social support [26]. Expected economic distress was associated with an increased risk of having negative emotions during the COVID-19 pandemic in Spain [27]. Similarly, economically inactive people and the self-employed, whose livelihood may have been affected by the social distancing measures during the pandemic, perceived greater restrictions in daily life than salaried workers in the present study. In that regard, it is natural that people receiving financial support in the manner of basic living security perceive less restrictions in daily life, as evidenced in this present study.

In sum, the findings of the current study and the previous ones suggest that certain groups of people are more vulnerable to the psychological impact of the pandemic than others, as measured by perceived restrictions in daily life. Based on these findings, intervention measures to improve lifestyle behaviors and perceptions of daily life should be tailored to meet the needs of the groups at risk. This study also showed that perceived restrictions in daily life during the COVID-19 pandemic were strongly associated with changes in lifestyle behaviors, in particular, decreases in physical activity and sleep duration, and increases in drinking and instant food consumption. All these changes in behaviors could have a potential impact on

health in the long run, which must be monitored in a future study. The negative perceptions of daily life associated with changes in lifestyle behaviors, observed in this current study, suggest the importance of continuing normal daily activities even under a public health disaster like the COVID-19. Previously, maintaining pre-pandemic social networks and daily routines was recommended in an editorial as a measure to guard against the risk of potential mental health problems [28]. The findings of the present study support the advice that was issued with great foresight.

To the best of the author's knowledge, this is the first study to examine changes in lifestyle behaviors and their relationships with perceived restrictions in daily life during the COVID-19 pandemic compared to pre-pandemic times using data from a nationally representative sample. Nonetheless, this study has some limitations. First, this study was based on self-reported data which may not accurately reflect actual changes in lifestyle behaviors. Second, this is based on cross-sectional data barring drawing causal relationships. Lastly, this study examined only immediate changes during the COVID-19 pandemic. Longer lasting changes in behaviors and perceptions of daily life can be investigated when long term data accumulate in the future.

5. Conclusion

In conclusion, a majority of the Korean population decreased social contact and physical activity the COVID-19 pandemic as compared to the pre-pandemic times. A substantial proportion also increased food delivery use and instant food consumption. All these changes were strongly associated with greater perceived restrictions in daily life during the pandemic. Efforts are needed to alleviate

the negative impact of the pandemic on lifestyle behaviors and psychological well-being.

REFERENCES

- [1] E. Alzueta, P. Perrin, F. C. Baker, S. Caffarra, D. Ramos-Usuga, D. Yuksel & J. C. Arango-Lasprilla. (2021). How the COVID-19 pandemic has changed our lives: A study of psychological correlates across 59 countries. *Journal of Clinical Psychology*, 77(3), 556-570. DOI : 10.1002/jclp.23082
- [2] F. Balkhi, A. Nasir, A. Zehra & R. Riaz. (2020). Psychological and behavioral response to the coronavirus (COVID-19) pandemic. *Cureus*, 12(5), e7923. DOI : 10.7759/cureus.7923
- [3] L. Di Renzo et al. (2020). Eating habits and lifestyle changes during COVID-19 lockdown: an Italian survey. *Journal of Translational Medicine*, 18(1), 229. DOI : 10.1186/s12967-020-02399-5
- [4] S. Wood, S. E. Harrison, N. Judd, M. A. Bellis, K. Hughes & A. Jones (2021). The impact of behavioural risk factors on communicable diseases: a systematic review of reviews. *BMC Public Health*, 21(1), 2110. DOI : 10.1186/s12889-021-12148-y
- [5] J. Kim, Y. Kim & J. Ha. (2021). Changes in daily life during the COVID-19 pandemic among South Korean older adults with chronic diseases: a qualitative study. *International Journal of Environmental Research and Public Health*, 18(13), 6781. DOI : 10.3390/ijerph18136781
- [6] J. Ingram, G. Maciejewski & C. J. Hand. (2020). Changes in diet, sleep, and physical activity are associated with differences in negative mood during COVID-19 lockdown. *Frontiers in Psychology*, 11, 2328. DOI : 10.3389/fpsyg.2020.588604
- [7] M. T. Tull, K. A. Edmonds, K. M. Scamaldo, J. R. Richmond, J. P. Rose & K. L. Gratz. (2020). Psychological outcomes associated with stay-at-home orders and the perceived impact of COVID-19 on daily life. *Psychiatry Research*, 289, 113098. DOI : 10.1016/j.psychres.2020.113098
- [8] L. K. Lades, K. Laffan, M. Daly & L. Delaney. (2020). Daily emotional well-being during the COVID-19 pandemic. *British Journal of Health Psychology*, 25(4), 902-911. DOI : 10.1111/bjhp.12450
- [9] D. Maison, D. Jaworska, D. Adamczyk & D. Affeltowicz. (2021). The challenges arising from the COVID-19 pandemic and the way people deal with them. A qualitative longitudinal study. *PLOS ONE*, 16(10), e0258133. DOI : 10.1371/journal.pone.0258133
- [10] M. J. Mækelæ, N. Reggev, N. Dutra, R. M. Tamayo, R. A. Silva-Sobrinho, K. Klevjer & G. Pfuhl. (2020). Perceived efficacy of COVID-19 restrictions, reactions and their impact on mental health during the early phase of the outbreak in six countries. *Royal Society Open Science*, 7(8), 200644. DOI : 10.1098/rsos.200644
- [11] G. E. Duncan, A. R. Avery, E. Seto & S. Tsang. (2020). Perceived change in physical activity levels and mental health during COVID-19: Findings among adult twin pairs. *PLOS ONE*, 15(8), e0237695. DOI : 10.1371/journal.pone.0237695
- [12] K. H. Park, A. R. Kim, M. A. Yang, S. J. Lim & J. H. Park. (2021). Impact of the COVID-19 pandemic on the lifestyle, mental health, and quality of life of adults in South Korea. *PLOS ONE*, 16(2), e0247970. DOI : 10.1371/journal.pone.0247970
- [13] A. Büssing, D. Rodrigues Recchia, R. Hein & T. Dienberg. (2020). Perceived changes of specific attitudes, perceptions and behaviors during the Corona pandemic and their relation to wellbeing. *Health and Quality of Life Outcomes*, 18(1), 374. DOI : 10.1186/s12955-020-01623-6
- [14] B. Nelson. (2020). The positive effects of covid-19. *BMJ*, 369, m1785. DOI : 10.1136/bmj.m1785
- [15] K. M. Jackson, J. E. Merrill, A. K. Stevens, K. L. Hayes & H. R. White. (2021). Changes in alcohol use and drinking context due to the COVID-19 pandemic: A multimethod study of college student drinkers. *Alcoholism: Clinical and Experimental Research*, 45(4), 752-764. DOI : 10.1111/acer.14574
- [16] Korea Disease Control and Prevention Agency. (2020). Community Health Survey. Retrieved January 15, 2021, Retrieved from: <https://chs.kdca.go.kr/chs/rdr/rdrInfoProcessMain.do>
- [17] Korea Disease Control and Prevention Agency. (2021). *Community Health Survey 2020 User Guide*. Osong, Korea. Retrieved from: <http://chs.kdca.go.kr>
- [18] D. L. Hahs-Vaughn, C. M. McWayne, R. J. Bulotsky-Shearer, X. Wen & A. M. Faria. (2011). Methodological considerations in using complex

- survey data: an applied example with the head start family and child experiences survey. *Evaluation Review*, 35(3), 269-303.
DOI : 10.1177/0193841X11412071
- [19] J. Hyun et al. (2021). COVID-19 and Risk Factors of Anxiety and Depression in South Korea. *Psychiatry Investigation*, 18(9), 801-808.
DOI : 10.30773/pi.2021.0125
- [20] V. Galasso, V. Pons, P. Profeta, M. Becher, S. Brouard & M. Foucault. (2020). Gender differences in COVID-19 attitudes and behavior: Panel evidence from eight countries. *Proceedings of the National Academy of Sciences*, 117(44), 27285-27291. DOI : 10.1073/pnas.2012520117
- [21] M. Kowal et al. (2020). Who is the most stressed during the COVID-19 pandemic? data from 26 countries and areas. *Applied Psychology: Health and Well-Being*, 12(4), 946-966.
DOI : 10.1111/aphw.12234
- [22] C. M. Lee, J. M. Cadigan & I.C. Rhew. (2020). Increases in loneliness among young adults during the COVID-19 pandemic and association with increases in mental health problems. *The Journal of Adolescent Health*, 67(5), 714-717.
DOI : 10.1016/j.jadohealth.2020.08.009
- [23] K. S. Birditt, A. Turkelson, K. L. Fingerma, C. A. Polenick & A. Oya. (2021). Age differences in stress, life changes, and social ties during the COVID-19 pandemic: implications for psychological well-being. *The Gerontologist*, 61(2), 205-216. DOI : 10.1093/geront/gnaa204
- [24] P. Klaiber, J. H. Wen, A. DeLongis & N. L. Sin. (2021). The ups and downs of daily life during COVID-19: age differences in affect, stress, and positive events. *The Journals of Gerontology: Series B*, 76(2), e30-e37.
DOI : 10.1093/geronb/gbaa096
- [25] P. Biroli, S. Bosworth, M. Della Giusta, A. Di Girolamo, S. Jaworska & J. Vollen. (2021). Family life in lockdown. *Frontiers in Psychology*, 12, 687570. DOI : 10.3389/fpsyg.2021.687570
- [26] J. Cervera-Martínez et al. (2021). Lifestyle changes and mental health during the COVID-19 pandemic: A repeated, cross-sectional web survey. *Journal of Affective Disorders*, 295, 173-182. DOI : 10.1016/j.jad.2021.08.020
- [27] J. Garre-Olmo et al. (2021). Changes in lifestyle resulting from confinement due to COVID-19 and depressive symptomatology: A cross-sectional population-based study. *Comprehensive Psychiatry*, 104, 152214.
DOI : 10.1016/j.comppsy.2020.12214
- [28] S. J. Jung & J. Y. Jun. (2020). Mental health and psychological intervention amid COVID-19 outbreak: perspectives from South Korea. *Yonsei Medical Journal*, 61(4), 271-272.
DOI : 10.3349/ymj.2020.61.4.271

승인명(Inmyung Song)

[정회원]



- 1989년 2월 : 서울대학교 약학과 (약학사)
- 1993년 8월 : 서울대학교 보건대학원(보건학석사)
- 1997년 7월 : 아이오주립대학교 약학대학(사회약학박사)
- 2003년 5월 : 듀크대학교 경영대학원(경영학석사)
- 2019년 9월~현재 : 공주대학교 보건행정학과 부교수
- 관심분야 : 삶의질, 주관적안녕, 보건산업
- E-Mail : inmyungs@gmail.com