CellMed
Orthocellular Medicine and Pharmaceutical Association

Original Article

The Effects of the art of convergence Program targeting Seniors on their Loneliness, Well-being, Happiness Index, and Quality of Life

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ABSTRACT

This study was conducted based on the results of a 25-week convergence arts program for the elderly, and was conducted to verify the extent to which the elderly were effective in reducing loneliness and improving their sense of well-being, happiness index, and quality of life after participating in this program. This study targeted 32 people in the experimental group and 40 people in the control group to determine how a convergence arts program using music and video as a tool in the lives of the elderly affects their loneliness, sense of well-being, happiness index, and quality of life. For this purpose, pre/post verification was conducted. Data were analyzed using the statistical program SPSS 22.0, and frequency analysis, independent sample *t*-test, paired sample *t*-test, and paired 2_non-parametric Z-test were performed. As a result of the study, in the areas of loneliness, communication_loneliness (t=2.113*, p=.043), self-esteem_loneliness (t=5.620***, p<.001), parent-child conflict_loneliness (t=2.406*, p=.022), and loneliness total score (t=5.578***, p<.001) were post-hoc averages. The score was lower than the pre-score. In other words, it appeared that loneliness decreased. Also, in the happiness index area, physical happiness index (t=-3.558**, p=.001), emotional happiness index (t=-3.680***, p=.001), social happiness index (t=-3.436**, p=.002), cognitive happiness index (t=-3.942***, p<.001), and occupational happiness index. (t=-3.792***, p=.001), and the total happiness index score (t=-3.707***, p=.001) showed that the post average score was higher than the pre score. This means that the happiness index of seniors who participated in the 25-week convergence arts program increased. Lastly, in the area of quality of life, health and influence within the family (t=-2.823**, p=.008), establishment of a support base (t=-7.322***, p<.001), ease of use of resources (t=-6.211***, p<.001), and total quality of life score (t=-6.211***, p<.001) were The average post-intervention score was found to be higher than the pre-score. In other words, it means that the quality of life has improved. This means that the happiness index of the elderly increased after participating in the 25-week convergence arts program.Lastly, the average scores for health and influence within the family (t=-2.823**, p=.008), establishing a support base (t=-7.322***, p<.001), ease of use of resources (t=-6.211***, p<.001), and the total score for quality of life (t=-6.211***, p<.001) was found to have a higher post-Intervention Score than the pre-score. This is interpreted as an increase in quality of life. In other words, the convergence arts program has a positive impact on mental health by lowering the loneliness of the elderly and improving their sense of well-being, happiness index, and quality of life.

Keywords Senior, Art of convergence program, mental health, Loneliness, Well-being, Happiness index and Quality of life

INTRODUCTION

1. The need for research

In modern society, the average human lifespan has been extended as the economy grows and medical science develops. This is having a significant impact on the rapidly increasing aging population. According to a 2023 survey by Statistics Korea, the elderly population was found to be 18.4% of the total domestic population. As life expectancy increases, old age is becoming longer than in previous generations. Nowadays, quality of life is becoming as important as living longer for the elderly. High life satisfaction is recognized as a characteristic representing a successful life.[1]

Low life satisfaction can cause various psychosocial problems.[2] As the elderly age, our physical functions decline, and after retiring from work, we become disconnected from others. When this happens, the elderly develop negative emotions about life and fall into a severe sense of loss.[3] According to a joint study,[4] older people who met less family or friends and participated in fewer group activities felt more socially lonely than those who were more socially active. In this way, the loneliness of the elderly is emerging as a serious social problem next to their economic difficulties and health problems.[5]

If loneliness persists throughout old age, it can have a negative impact on one's sense of worth, social life, and health

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Received Apr 30, 2024; **Accepted** May 31, 2024; **Published** May 31, 202
doi: http://dx.doi.org/10.5667/CellMed.2024.008

behavior,[6] and can cause anger and depression, leading to suicide in the most serious cases.[7,8] Factors that are deeply related to the loneliness and depression of the elderly are quality of life as a higher level factor and well-being and happiness as lower level factors. Well-being refers to the degree to which an individual feels happy or satisfied throughout life, and psychological stability refers to an individual's mental health and tranquility.

Quality of life is an individual's subjective perception and evaluation of an individual's internal needs, such as autonomy, control, happiness, and self-actualization.[9] It also has a comprehensive meaning that includes not only emotions such as joy and pleasure, but also a sense of well-being, happiness, adaptability to society, successful maturation, and motivation.[10] It is said that the factor that has the most important impact on the quality of life of the elderly is 'relationships.' In particular, problems and feelings of isolation that arise in family relationships, such as marital relationships and relationships with children, are said to increase depression in the elderly and are also related to physical health, such as decreased immune function and worsening of chronic diseases.[11]

Many fields and organizations are taking various approaches to improve the quality of life of the elderly. Local social welfare facilities are increasing programs to fully enjoy and lead life, along with simple education for the elderly.[12] Programs to improve the quality of life of the elderly are based on content appropriate for their physical and mental levels and are in the nature of group programs that can be done with multiple members through various media such as gardening, art, and music. Among them, 'music' makes it easy to interact with group members, and above all, inner problems and pain can be expressed through non-verbal musical activities.[13]

In a study by Jae-im Lee (2017), group members were able to communicate with each other by forming a consensus through music.[14] This resulted in reducing the loneliness of the elderly and improving their quality of life by increasing intimacy, social relationship support networks, and sense of belonging. Meanwhile, in the study by Kim Ha-yan (2015),[15] a music program was conducted using not only simple music activities but also stories. A 'story music note' was created for each subject, and songs and stories were told by life cycle, including childhood, adolescence, middle age, twilight, and the present. Through a program that combines stories and music, the elderly's satisfaction with their current life, positive attitude toward life, and accepting attitude toward old age improved, which had a positive effect on their sense of self-integration and quality of life. In this way, song-centered musical activities not only allow older people who lived in the same era to share memories with each other through lyrics in songs, but also enrich the remaining lives of older people by allowing each individual to express their thoughts and purify their emotions.[16] In particular, music stimulates the memory of older people because it creates powerful associations in their brains. As a result, older people look back on their lives, successfully integrate themselves for the rest of their lives, and improve their quality of life.[17]

As a result of previous research, the effect of being able to look back on one's life through music has been continuously verified. However, due to the nature of music as a temporal art, it has the characteristic of being difficult to leave behind as a result like art or gardening programs. In order to compensate for this, this study combines music and video to create a single record, conducts a program that can reconfirm the educational process through video, and verifies its effectiveness.

Video production and IT use were areas that were considered the exclusive domain of the younger generation. However, as smartphones and tablets spread and video production technology becomes simpler, it is changing into an area that even older people can learn.[18] If the elderly use media freely, regardless of time and space, they can not only expand their social relationships, but also gain social support and psychological stability, which can improve life satisfaction and quality of life for the.[19] Recently, based on this point from a counseling perspective, it was announced that there was a psychotherapeutic effect using video media.[20] However, there are limits to achieving therapeutic effects through video alone. Considering that music elements are essential for video,[21] it is believed that the development of an art convergence program that combines music and video is necessary.

Here, fusion means merging into one another and becoming one.[22] In other words, it means that the two areas are 'reborn' by developing existing things into something bigger and new through creative thinking, creative reinterpretation, and recombination.[23] To this end, based on the educational meaning of art, which has a communicative, healing, and creative function, the boundaries between different fields such as music and video are broken down, and an interdisciplinary approach that freely crosses all fields such as humanities and social sciences, arts, and natural sciences is established. Access must be made. In this study, we aim to investigate the effects on the loneliness, well-being, happiness index, and overall quality of life of the elderly through a program that combines music healing and media images.

2. Research hypothesis

The research hypothesis established to carry out the purpose of this study is as follows.

Hypothesis 1: The 25-week convergence art program between the experimental group and the control group will have significant differences in pre/post scores in the elderly's loneliness, well-being, happiness index, and quality of life.

Hypothesis 2: The 25-week convergence art program according to the gender of the experimental group will have significant differences in pre/post scores in the elderly's loneliness, well-being, happiness index, and quality of life.

Hypothesis 3: There will be significant differences in pre/post scores in the 25-week convergence culture and arts program according to the age group of the experimental group in terms of loneliness, well-being, happiness index, and quality of life of the elderly.

MATERIALS AND METHODS

1. Research object

The subjects of this study were selected as participants in a convergence arts program for the elderly conducted by the R Research Institute in Gangnam-gu, Seoul. They consisted of 40 experimental group members and 40 non-participants who participated in a 25-week convergence arts program. Of the 40 people in the experimental group, 8 people who stopped participating in the program for 25 weeks were excluded, and data from the remaining 32 people

were used for analysis. The sex ratio was 32 men (44.4%) and 40 women (55.6%), with 30 people in their 60s (41.7%) and 42 people in their 70s (58.3%). The average age was 71.9 years (±4.0) in the experimental group and 69.8 years (±3.2) in the control group, which was judged to be a relatively small difference. In order to clearly determine the composition of the research subjects, homogeneity of the group composition was verified prior to pre/post verification. The general characteristics of the research subjects are shown in Table 1.

Table 1. General characteristics of the study subjects (N=72)

Item	Frequency	(N)	(%)
Group classification	experimental group	32	44.4
	control group	40	55.6
gender	male	32	44.4
	female	40	55.6
age range	60s	30	41.7
	70s	42	58.3

Average age: experimental group 71.9 years (±4.0), control group 69.8 years (±3.2)

2. Experimental design

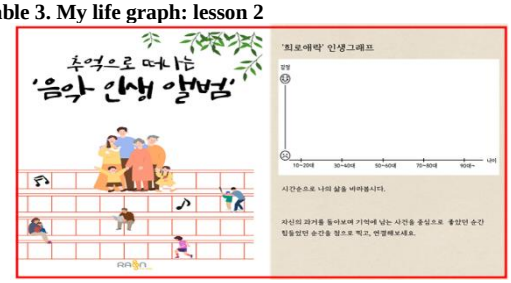
1) A convergence art program

This study was conducted under the title <00 Life Album Leaving Memories> targeting participants who participated in a convergence arts program for 25 weeks from May to October, 2021. For this convergence arts program, an expert group consisting of a music and psychology professor and two doctoral students conducted a preliminary survey on the elderly three times. Afterwards, the final convergence arts program was formed based on the opinions of these expert groups. This convergence arts program was conducted at the R Research Institute in Gangnam-gu, Seoul, and was conducted to find out how positive psychological effects music and video have on the elderly. For this purpose, the monthly plans (goals) and implementation details are as shown in Table 2, and the specific plans and implementation schedule for each round are as shown in Table 5.

Table 2. Monthly plan (goal) and progress details

No.	Plan(goal)	Promotion contents
5	Production of video storyboard kit	<00 Life Album Leaving Memories> composition and kit production
5	1: Participant OT 2: My life graph 3: The happiest moment	You can gain a general understanding of the program, create a timeline of your life, and talk about your happiest moments.
6	4: My hometown and music 5:My hometown photo collage and video storyboard composition 6: Video editing using apps 7: Childhood and music	You can create a video storyboard by collaging music and photos that remind you of your hometown and childhood and learn video editing using the app.
7	8: Composition of childhood photo collage and video storyboard 9: Video editing using apps 10: School days and music 11: Composition of photo collage and video storyboard from school days	You can create a video storyboard by collaging music and photos from your childhood and school days and learn video editing using the app.
8	12: Video editing using apps 13:Music with loved ones 14: Photo storyboard composition of a loved one 15: Video editing using apps 16: Family and music	You can collage music and photos of your loved ones (spouse, family) to compose a video storyboard and learn video editing using the app.
9	17: Composition of family photo collage and video storyboard 18: Video editing using apps 19: Current me and music 20: Current photo collage and video storyboard composition	Following the theme of love for others, such as your beloved spouse or family, you can learn video editing by selecting music and photos that contain the theme of love for yourself, and composing a video storyboard.
10	21: Video editing using apps 22: Composition of music, message, and video storyboard to convey to grateful people 23: Music life album final video editing using the app 1. 24: Music life album final video editing using the app 2. 25: Screening	Lastly, I will create my own 'Life Album (Video)' by integrating existing works and have a screening event, after composing a video storyboard with music and a message to those I am thankful for.

Table 3. My life graph: lesson 2



	Lesson 2
Purpose	To investigate the effect of interdisciplinary arts programs on the lives of the elderly
Secondary goal	Write an autobiography and find meaning in life through music.
Eligibility	Seniors 60 years of age and older
Time	over 40 minutes
Rationale	Life retrospective and happy life in old age through music therapy reminiscence activities
Program Type	Face-to-face/Non-face-to-face (Kit Dispatch + Video)

3. Inspection items and methods

The measurement tool used in this study is shown in Table 4.

Table 4. Measurement tools

No.	Variable	Subfactor	Number of questions
1	Loneliness	Communication_Loneliness	5 questions
		Self-esteem_Loneliness	5 questions

		Parent-child conflict_loneliness	3 questions
		Loneliness total score	Total 13 questions
2	Well-being	Hello total score	Total 10 questions
3	Happiness index	Physical happiness index	4 questions
		Emotional Happiness Index	5 questions
		Social Happiness Index	3 questions
		Cognitive Happiness Index	3 questions
		Occupational Happiness Index	3 questions
		Happiness index total score	Total 18 questions
4	Quality of life	Quality of life_Health and influence within the family	5 questions
		Quality of life_Stability in life	13 questions
		Quality of life _Establishment of support base	5 questions
		Quality of life _Ease of using resources	8 questions
		Total quality of life score	Total 31 questions

1) Loneliness

The research tool used to measure loneliness in the elderly was developed by Ga-hyeon Yoon and Dae-hyun Song (1989) to measure feelings of loneliness derived from relationships with children, and was used by Moon-young Kim and Hyeon-hee Jeong (2004) to measure feelings of loneliness in the elderly.[24,25] It was used after modification and supplementation according to the purpose of the study. It consists of a total of 13 questions, 6 positive and 7 negative, and each question was scored on a 5-point Likert scale, with the negative items being scored in reverse. A higher score means a higher sense of loneliness. In this study, 3 sub-factors were composed of 5 items for communication_loneliness, 5 items for self-esteem_loneliness, and 3 questions for parent-child conflict_loneliness. At the time of development, the split-half reliability based on the Spearman-Brown formula was .88.

2) Well-being

This study used the Affect Balance Scale (ABS), which Bradburn (1969) used to measure conflicting moods of depression,[26] as a research tool to measure well-being. In addition, this study modified and supplemented the research tool used to measure the well-being of the elderly in Seong Eun-ok's (2002) study to suit the purpose of this study.[27] It consists of a total of 10 questions, including 5 positive emotion questions and 5 negative emotion questions, and at the time of development, they were scored as 1 point for 'yes' and 0 points for 'no.' In this study, negative emotion items were scored on a 5-point Likert scale, with higher scores indicating higher well-being. Bradburn (1960)'s test-retest reliability test showed that the Q value was .86~.96 for positive emotion questions and .90~.97 for negative emotion questions.

3) Happiness index

This study used the wellness index for workers developed by Munjong Choi, Changsik Son, Jinsoo Kim, and Youngmi Ha (2016) as a research tool to measure happiness index,[28] modified and supplemented to suit the purpose of this study.

It consists of a total of 5 sub-factors: 4 physical questions, 5 emotional/spiritual questions, 3 social questions, 3 cognitive questions, and 3 occupational questions. It is a 5-point Likert scale, with higher scores indicating an optimal state of health. It means good health or well-being, happiness, or fitness. In other words, it means that the happiness index is high (Choi Moon-jong, Son Chang-sik, Kim Jin-su, Ha Young-mi, 2016; Smith, Tang, & Nutbeam, 2006).[28,29] At the time of development, reliability was .71 for physical, .81 for emotional, .76 for social, .70 for cognitive, and .81 for occupational.

4) Quality of life

This study used the Korean Quality of Life Scale for the Elderly developed by Choi Soo-jeong (2001) as a research tool to measure the quality of life of the elderly,[30] and the research tool used by Kim Yeon-sook and Kim Joo-hee (2004) was adapted to the purpose of this study.[31] It was used after modification and supplementation. It consists of 31 questions in total, including 4 sub-factors, including 13 questions on life stability, 8 questions on ease of use of resources, 5 questions on health and influence within the family, and 5 questions on establishment of a support base. It is based on a 5-point Likert scale, and the higher the score, the better the elderly. This means that the quality of life is high. In the study by Choi Soo-jeong (2001),[30] reliability was .950, and in the study by Kim Yeon-sook and Kim Joo-hee (2004),[31] it was .926.

Table 5. Schedule and plan for each episode

Sess.	Main activity
1	Participant OT: Program introduction and getting to know 'me' through constellation music
2	The joys, sorrows, and joys of life: Creating a life graph
3	花様年華: About the most beautiful and happiest time in life
4	My hometown: Finding music that resembles the atmosphere of my hometown
5	Combining as I like: Collage of photos of my hometown and video storyboard composition
6	Senior Music Creator: Video editing using apps
7	Self-portrait as a child: childhood and music
8	Mix it up the way you want: Collage of childhood photos and video storyboard composition
9	Senior Music Creator: Video editing using apps
10	Riding the Youth Train: School Days and Music
11	Mix it up the way you want: Collage of photos from your school days and composition of video storyboards
12	Senior Music Creator: Video editing using apps

13	落花流水: music with loved ones
14	Mix it up the way you want: Compose a photo collage and video storyboard of your loved ones
15	Senior Music Creator: Video editing using apps
16	Birth of a Family: Family and Music
17	Mix it up the way you want: Family photo collage and video storyboard composition
18	Senior Music Creator: Video editing using apps
19	Flowers blooming in the twilight fields: Me and music today
20	Mix it up the way you want: Current photo collage and video storyboard composition
21	Senior Music Creator: Video editing using apps
22	My grateful people: Music, messages, and video storyboards conveying gratitude
23	Senior Music Creator: Music Life Album Final Video Editing Using Apps 1
24	Senior Music Creator: Music Life Album Final Video Editing Using App 2
25	Screening

*Non-face-to-face plan in response to COVID-19: Kit delivery and Zoom online lectures

4. Verification of homogeneity of preliminary composition of research subjects

Prior to pre/post verification to achieve the purpose of the study, this study conducted a homogeneity verification of the composition of the group to clearly determine the composition of the research subject. To verify compositional homogeneity, gender, age group, experimental group, and control group were examined.

1) Verification of composition homogeneity according to gender

In this study, the results of verifying the homogeneity of the composition according to gender as a measurement tool are shown in Table 6. Most sub-factors were confirmed to be homogeneous, including physical happiness index (t=2.018*, p=.047) in the happiness index, health and family influence in quality of life (t=2.086*, p=.041), and stability in life (t=2.079*, p=.041). Men showed a slightly higher average value than women.

Table 6. Verification of composition homogeneity by gender (male N = 32/female N = 40)

variable	Subfactor	group	*M*	±*SD*	*t*	*p*
Loneliness	Communication _Loneliness	male	1.95	0.60	1.319	.192
		female	1.75	0.68		
	Self-esteem _Loneliness	male	1.57	0.51	1.455	.150
		female	1.38	0.58		
	Parent-child conflict _loneliness	male	1.38	0.51	.404	.688
		female	1.33	0.63		
	Loneliness total score	male	2.05	0.58	1.439	.155
		female	1.82	0.71		
Well -being	Well-being total score	male	1.29	0.24	1.539	.128
		female	1.19	0.32		
Happiness index	physical happiness Index	male	2.06	1.42	2.018*	.047
		female	1.44	1.19		
	emotional happiness Index	male	1.95	1.35	1.731	.088
		female	1.44	1.17		
	Social Happiness Index	male	1.82	1.20	1.836	.071
		female	1.33	1.05		
	Cognitive Happiness Index	male	1.72	1.15	1.355	.180
		female	1.36	1.09		
	Occupational Happiness Index	male	1.67	1.12	1.318	.192
		female	1.33	1.06		
	Happiness Index total score	male	2.40	1.75	1.699	.094
		female	1.74	1.56		
Quality of life	Quality of life_Health and influence within the family	male	2.90	0.73	2.086*	.041
		female	2.47	0.96		
	Quality of life _Stability in life	male	3.24	0.82	2.079*	.041
		female	2.74	1.17		
	Quality of life _Establishment of support base	male	2.65	0.62	1.744	.086
		female	2.32	0.93		
	Quality of life_Ease of utilizing resources	male	3.47	0.85	1.927	.058
		female	2.98	1.20		
	Total quality of life score	male	3.47	0.85	1.927	.058
		female	2.98	1.20		

*p<.05, **p<.01, ***p<.001

5. Data processing method

To process the data of this study, frequency analysis, independent sample t-test, paired sample t-test, and paired 2_nonparametric Z-test were conducted using the statistical program SPSS 22.0. The level of statistical significance was set at the p<.05 level.

Table 7. Verification of composition homogeneity by age group (60s N = 30/70s N = 42)

variable	Subfactor	group	*M*	±*SD*	*t*	*p*
Loneliness	Communication _Loneliness	male	1.96	0.80	1.314	.193
		female	1.75	0.52		
	Self-esteem _Loneliness	male	1.66	0.72	2.526*	.014
		female	1.33	0.35		
	Parent-child conflict_loneliness	male	1.32	0.61	-.336	.738
		female	1.37	0.55		
	Loneliness total score	male	2.07	0.80	1.586	.117
		female	1.82	0.52		
Well -being	Well-being total score	male	1.16	0.31	-1.988	.051
		female	1.29	0.27		
Happiness	physical	male	1.59	1.20	-.694	.490

index	happiness Index	female	1.81	1.42		
	Emotional Happiness Index	male	1.56	1.16	-.576	.566
		female	1.74	1.35		
	Social Happiness Index	male	1.44	1.06	-.671	.504
		female	1.62	1.20		
	Cognitive Happiness Index	male	1.40	1.00	-.761	.449
		female	1.60	1.21		
	Occupational Happiness Index	male	1.41	1.02	-.440	.661
		female	1.53	1.15		
	Happiness Index total score	male	1.89	1.53	-.634	.528
		female	2.14	1.77		
Quality of life	Quality of life _Health and influence within the family	male	2.60	0.91	-.465	.643
		female	2.70	0.87		
	Quality of life _Stability in life	male	2.77	1.08	-1.307	.195
		female	3.10	1.02		
	Quality of life _Establishment of support base	male	2.40	0.87	-.629	.531
		female	2.52	0.79		
	Quality of life_Ease of using resources	male	3.08	1.16	-.799	.427
		female	3.28	1.02		
	Total quality of life score	male	3.08	1.16	-.799	.427
		female	3.28	1.02		

*p<.05, **p<.01, ***p<.001

RESULTS

This study was conducted to find out how a 25-week art convergence program conducted for the elderly affected their loneliness, well-being, happiness index, and quality of life. For this purpose, pre/post verification was conducted on 32 people in the experimental group and 40 people in the control group. The final research results are as follows.

1. Pre-/post-verification of the experimental group

The pre/posttest results according to the experimental group are shown in Table 8.

First, in loneliness, communication_loneliness (t=2.113*, p=.043), self-esteem_loneliness (t=5.620***, p<.001), parent-child conflict_loneliness (t=2.406*, p=.022), and loneliness total score (t=5.578***, p<.001) are pre-post scores. It showed a low average compared to the score. In other words, it was found that elderly people's sense of loneliness decreased after participating in a senior cultural program for 25 weeks.

Second, in terms of well-being, the post-intervention score was slightly higher than the pre-score, but there was no significant difference (p>.05).

Third, in the happiness index, physical happiness index (t=-3.558**, p=.001), emotional happiness index (t=-3.680***, p=.001), social happiness index (t=-3.436**, p=.002), cognitive happiness index (t=-3.942***, p<.001), and occupational happiness index (t=-3.792***, p=.001), and the total happiness index score (t=-3.707***, p=.001), the post-intervention score showed a higher average than the pre-score. In other words, after participating in the senior culture program for 25 weeks, the happiness index of the elderly was found to increase.

Fourth, in terms of quality of life, health and family influence (t=-2.823**, p=.008), establishment of support base (t=-7.322***, p<.001), ease of use of resources (t=-6.211***, p<.001), and total quality of life score (t=-6.211***, p<.001) were evaluated after the fact. The average score was higher than the pre-score. In other words, the quality of life of the elderly was found to increase after participating in the cultural program for 25 weeks.

Table 8. Pre/posttest according to experimental group (experimental group N=32)

variable	subfactor	group	*M*	±*SD*	*t*	*p*
loneliness	Communication _Loneliness	pre	1.97	.51	2.113*	.043
		post	1.88	.40		
	Self-esteem _Loneliness	pre	1.56	.47	5.620***	.000
		post	1.37	.32		
	Parent-child conflict_loneliness	pre	1.49	.52	2.406*	.022
		post	1.33	.53		
	Loneliness total score	pre	2.07	.52	5.578***	.000
		post	1.84	.44		
Well-being	Well-being total score	pre	1.26	.22	-1.384	.176
		post	1.28	.20		
happiness index	physical well-being index	pre	2.14	1.33	-3.558**	.001
		post	2.72	.51		
	Emotional Happiness Index	pre	2.02	1.26	-3.680***	.001
		post	2.70	.44		
	Social Happiness Index	pre	1.89	1.14	-3.436**	.002
		post	2.51	.42		
	Cognitive Happiness Index	pre	1.80	1.09	-3.942***	.000
		post	2.41	.42		
	Occupational Happiness Index	pre	1.73	1.04	-3.792***	.001
		post	2.33	.42		
	Happiness index total score	pre	2.50	1.64	-3.707***	.001
		post	3.37	.53		
quality of life	Quality of life _Health and influence within the family	pre	2.71	.74	-2.823**	.008
		post	2.86	.70		
	Quality of life _Stability in life	pre	2.99	.84	-1.140	.263
		post	3.09	.85		
	Quality of life _Establishment of support base	pre	2.42	.59	-7.322***	.000
		post	2.79	.64		
	Quality of life _Ease of utilizing resources	pre	3.20	.81	-6.211***	.000
		post	3.53	.82		
	Total quality of life score	pre	3.20	.81	-6.211***	.000
		post	3.53	.82		

*p<.05, **p<.01, ***p<.001

2. Pre/post verification according to gender and age of the experimental group

The pre- and post-test results of the experimental group according to gender and age are shown in able 10.

1) Pre-/post-verification according to the gender of the experimental group

First, in the case of loneliness, for men, the post-intervention scores showed lower averages than the pre-scores for self-esteem_loneliness (***Z***=-2.845**, *p*=.003), parent-child conflict_loneliness (***Z***=-3.874***, *p*<.001), and loneliness total score (***Z***=-3.145***, *p*<.001). For women, the post-intervention scores for communication_loneliness (***Z***=-3.464***, *p*<.001), self-esteem_loneliness (***Z***=-3.145***, *p*<.001), and loneliness total score (***Z***=-3.145***, *p*<.001) showed lower averages than the pre-scores.

Second, in terms of well-being, for men, the post-intervention score showed a lower mean than the pre-score (***Z***=-2.449*, *p*=.031), and for women, the post-intervention score showed a higher mean than the pre-score (***Z***=-2.449*, *p*=.031).

Third, there was no significant difference in the happiness index for men (*p*>.05). For women, physical happiness index (***Z***=-2.200*, *p*=.031), emotional happiness index (***Z***=-2.013*, *p*=.036), social happiness index (***Z***=-2.013*, *p*=.036), cognitive happiness index (***Z***=-3.397***, *p*<.001), and occupational happiness index (***Z***=-2.013*, *p*= .036), and the total happiness index score (***Z***=-2.013*, *p*=.036) showed a higher average in the post-intervention score than the pre-score.

Fourth, in terms of quality of life, for men, post-intervention scores had higher averages than pre-scores for establishing a support base (***Z***=-3.771***, *p*<.001), ease of use of resources (***Z***=-3.771***, *p*<.001), and total quality of life score (***Z***=-3.771***, *p*<.001). It seemed. For women, health and influence within the family (***Z***=-3.145***, *p*<.001), stability in life (***Z***=-3.145***, *p*<.001), establishment of a support base (***Z***=-3.145***, *p*<.001), ease of use of resources (***Z***=-3.145***, *p*<.001), total quality of life score (***Z***=-3.145***, *p*<.001), the post-score showed a higher average than the pre-score.

2) Pre-/post-verification according to the age of the experimental group

First, in terms of loneliness, in the case of people in their 60s, the post-intervention scores for communication_loneliness (***Z***=-2.449*, *p*=.031), self-esteem_loneliness (***Z***=-2.449*, *p*=.031), and loneliness total score (***Z***=-2.449*, *p*=.031) showed lower averages than the pre-scores. , Parent-child conflict_loneliness (***Z***=-2.449*, *p*=.031) showed a higher average post-intervention score than the pre-score. In the case of people in their 70s, the post-intervention scores showed lower average scores compared to the pre-scores for self-esteem_loneliness (***Z***=-3.755***, *p*<.001), parent-child conflict_loneliness (***Z***=-4.366***, *p*<.001), and loneliness total score (***Z***=-3.771***, *p*<.001).

Second, in terms of well-being, for those in their 60s, the post-intervention score showed a higher average than the pre-score (***Z***=-2.449*, *p*=.031), and for those in their 70s, the post-intervention score showed a lower average than the pre-score (***Z***=-2.449*, *p*=.031).

Third, in terms of happiness index, for those in their 60s, emotional happiness index (***Z***=-2.449*, *p*=.031), social happiness index (***Z***=-2.449*, *p*=.031), cognitive happiness index (***Z***=-2.449*, *p*=.031), occupational happiness index (***Z***=-2.449*, *p*=.031), happiness The total index score (***Z***=-2.449*, *p*=.031) showed a lower average post-score than the pre-score, and for people in their 70s, the physical happiness index (***Z***=-2.600**, *p*=.008), emotional happiness index (***Z***=-2.342*, *p*=.018), and social happiness index (***Z***=-2.952**, *p*= .002), cognitive happiness index (***Z***=-2.219*, *p*=.026), occupational happiness index (***Z***=-3.165***, *p*=.001), and total happiness index score (***Z***=-2.342*, *p*=.018), the post-score showed higher averages than the pre-score.

Fourth, in terms of quality of life, for those in their 60s, health and influence within the family (***Z***=-2.449*, *p*=.031), stability in life (***Z***=-2.449*, *p*=.031), establishment of a support base (***Z***=-2.449*, *p*=.031), convenience in utilizing resources (***Z***=-2.449*, *p*=.031), As for the total quality of life score (***Z***=-2.449*, *p*=.031), the post-score showed a higher average than the pre-score, and for those in their 70s, establishment of a support base (***Z***=-4.317***, *p*<.001), ease of use of resources (***Z***=-4.317***, *p*<.001), and total quality of life score (***Z***=-4.317***, *p*<.001) showed that the post-score had a higher average than the pre-score.

Table 9. The results produced by the participants of the Convergence Art Program: screen shot

DISCUSSION

This study was conducted to determine the effects of a convergence arts program targeting the elderly on their loneliness, well-being, happiness index, and quality of life, and the following discussions were conducted. The subjects were an experimental group of 40 people and a non-participating group of 40 people who participated in a 25-week convergence arts program. Among the 40 people in the experimental group, 8 people who didn't complete the 25 week program were excluded, and the final 32 people's data were used for analysis. The sex ratio was 32 men (44.4%) and 40 women (55.6%), with 30 people in their 60s (41.7%) and 42 people in their 70s (58.3%). The average age was 71.9 years (±4.0) in the experimental group and 69.8 years (±3.2) in the control group, which was judged to be a relatively small difference. In order to clearly determine the composition of the research subject, homogeneity of the group composition was verified prior to pre/post verification.

The experiment was conducted a total of 25 times from May to October, 2021, and was conducted once a week for 50 minutes. Through this convergence art program, we were able to obtain data on the effects on the loneliness, well-being, happiness index, and quality of life of the elderly. The data of this study were processed using the statistical program SPSS 22.0, and frequency analysis, independent sample *t*-test, paired sample *t*-test, and paired 2_nonparametric *Z*-test were

Table 10. Pre/post testing by gender and age group of the experimental group (an experimental group N=32 / male N=18, woman N=14 / 60s N=6, 70s N=26)

variable	subfactor	group	male				woman				60s				70s			
			M	±*SD*	*Z*	*p*	*M*	±*SD*	*Z*	*p*	*M*	±*SD*	*Z*	*p*	*M*	±*SD*	*Z*	*p*
loneliness	Communication loneliness	pre	1.98	.39	-1.257	.228	1.97	.66	-3.464***	.000	2.43	.00	-2.449*	.031	1.87	.52	-1.659	.099
		post	1.90	.07			1.85	.61			2.29	.00			1.79	.38		
	Self-respect loneliness	pre	1.44	.21	-2.845**	.003	1.71	.65	-3.145***	.000	2.33	.00	-2.449*	.031	1.38	.32	-3.755***	.000
		post	1.33	.07			1.42	.48			1.86	.00			1.26	.23		
	Parent-child conflict loneliness	pre	1.40	.44	-3.874***	.000	1.61	.61	0.000	1.000	1.40	.00	-2.449*	.031	1.52	.58	-4.366***	.000
		post	1.10	.47			1.61	.47			1.80	.00			1.22	.53		
	A total score for loneliness	pre	1.98	.25	-3.145***	.000	2.19	.73	-3.145***	.000	2.60	.00	-2.449*	.031	1.95	.50	-3.771***	.000
		post	1.77	.17			1.93	.65			2.40	.00			1.71	.39		
Well-being	a total score for Well-being	pre	1.36	.04	-2.449*	.031	1.13	.28	-2.449*	.031	1.13	.00	-2.449*	.031	1.29	.23	-2.449*	.031
		post	1.33	.00			1.21	.30			1.33	.00			1.27	.23		
happiness index	Physical happiness index	pre	2.44	1.42	-1.452	.162	1.74	1.14	-2.200*	.031	2.83	.00	0.000	1.000	1.97	1.43	-2.600**	.008
		post	2.89	.57			2.50	.32			2.83	.00			2.69	.56		
	Emotional happiness index	pre	2.26	1.37	-0.331	.736	1.70	1.08	-2.013*	.036	2.57	.00	-2.449*	.031	1.89	1.38	-2.342*	.018
		post	2.86	.52			2.49	.16			2.43	.00			2.76	.47		
	Social happiness index	pre	2.17	1.22	-1.452	.162	1.53	.93	-2.013*	.036	2.20	.00	-2.449*	.031	1.82	1.25	-2.952**	.002
		post	2.73	.35			2.23	.34			2.00	.00			2.63	.38		
	Cognitive happiness index	pre	1.97	1.15	-0.340	.723	1.59	1.01	-3.397***	.000	2.20	.00	-2.449*	.031	1.71	1.19	-2.219*	.026
		post	2.47	.42			2.34	.41			2.40	.00			2.42	.46		
	Occupational happiness index	pre	1.90	1.14	-1.452	.162	1.50	.90	-2.013*	.036	2.20	.00	-2.449*	.031	1.62	1.13	-3.165***	.001
		post	2.47	.42			2.14	.36			2.00	.00			2.40	.44		
	A total score for happiness index	pre	2.83	1.76	-0.331	.736	2.07	1.41	-2.013*	.036	3.20	.00	-2.449*	.031	2.34	1.78	-2.342*	.018
		post	3.58	.59			3.10	.27			3.10	.00			3.43	.57		
quality of life	Health and influence within the family	pre	3.10	.37	-1.452	.162	2.21	.80	-3.145***	.000	2.86	.00	-2.449*	.031	2.68	.82	-1.257	.228
		post	3.08	.38			2.58	.91			3.14	.00			2.80	.76		
	living stability	pre	3.53	.30	-0.340	.723	2.30	.80	-3.145***	.000	2.86	.00	-2.449*	.031	3.02	.93	-1.659	.099
		post	3.33	.68			2.79	.97			3.13	.00			3.08	.95		
	Establishment of support base	pre	2.76	.07	-3.771***	.000	1.97	.66	-3.145***	.000	2.43	.00	-2.449*	.031	2.41	.65	-4.317***	.000
		post	3.10	.14			2.40	.82			2.57	.00			2.84	.71		
	Ease of resource utilization	pre	3.68	.18	-3.771***	.000	2.60	.91	-3.145***	.000	3.16	.00	-2.449*	.031	3.21	.91	-4.317***	.000
		post	3.85	.21			3.10	1.10			3.47	.00			3.54	.92		
	A total score for quality of life	pre	3.68	.18	-3.771***	.000	2.60	.91	-3.145***	.000	3.16	.00	-2.449*	.031	3.21	.91	-4.317***	.000
		post	3.85	.21			3.10	1.10			3.47	.00			3.54	.92		

*p<.05, **p<.01, ***p<.001 [+]Correspondence 2-sample non-parametric test: Wilcoxon Signed Rank Test

performed. The level of statistical significance was set at the p<.05 level. Based on this, the results derived from this study are as follows.

As a result of the study, in the areas of loneliness, communication_loneliness (t=2.113*, p=.043), self-esteem_loneliness (t=5.620***, p<.001), parent-child conflict_loneliness (t=2.406*, p=.022), and loneliness total score (t=5.578***, p<.001) were post-hoc averages. The score was lower than the pre-score. In other words, it appeared that loneliness decreased. Also, in the happiness index area, physical happiness index (t=-3.558**, p=.001), emotional happiness index (t=-3.680***, p=.001), social happiness index (t=-3.436**, p=.002), cognitive happiness index (t=-3.942***, p<.001), and occupational happiness index. (t=-3.792***, p=.001), and the total happiness index score (t=-3.707***, p=.001) showed that the post average score was higher than the pre score. This means that the happiness index of seniors who participated in the 25-week convergence arts program increased. Lastly, in the area of quality of life, health and influence within the family (t=-2.823**, p=.008), establishment of a support base (t=-7.322***, p<.001), ease of use of resources (t=-6.211***, p<.001), and total quality of life score (t=-6.211***, p<.001) were The average post-intervention score was found to be higher than the pre-score. In other words, it means that the quality of life has improved. This showed that the happiness index of the elderly increased after participating in the 25-week convergence arts program.

Lastly, the quality of life area includes health and influence

within the family (p=.008), establishment of a support base (p<.001), ease of use of resources (p<.001), and total quality of life score (p<.001). It was found that their post-intervention scores were average compared to their pre-scores. Ultimately, the quality of life was found to have increased. In other words, the convergence arts program has a positive impact on mental health by lowering the loneliness of the elderly and improving their sense of well-being, happiness index, and quality of life.

The results of this study have the following significance.

First, older people have friendly and stable emotions through their favorite songs. This will not only increase the participation rate in the program, but also increase immersion in activities and increase satisfaction accordingly.

Second, looking at photos that can recall memories, the old man reminisces about his past, while also having an inner meeting with himself and understanding of himself. Additionally, groups of similar age form bonds by talking about common interests, which corresponds to the research results of Soyoung Lee (2009).[32]

Third, while participating in the convergence program, the elderly said things like, “I love having such a good program and I look forward to class time,” “I am happy during class time,” and “I have a topic to talk about with my granddaughter, and my grandkids are cheering me on next time.” They expressed various positive words and actions to the researcher, such as 'I wish my friends would take the class with me.'

The reason why it was possible to build rapport with older people in a short period of time is because there was music that people of the same generation could relate to, and interpersonal relationships were naturally formed through singing. This is similar to the research results of Choi Young-jo (2024),[33] who received responses such as feeling less lonely than before due to participation in the convergence program.

The elderly not only lose their social status, but also have limited activities in terms of social relationships and financial resources. Therefore, numerous studies have been conducted to positively improve loneliness, well-being, happiness index, and quality of life in the elderly were announced.[34-37] Among these, the field of music has the advantage of being able to be used to escape from the sense of loss of status experienced by the elderly, difficulties in forming new social relationships, and economic restrictions.

As shown in the results of this study, the convergence arts program organized by this researcher and expert group was found to have a positive influence on the mental health of the elderly. Accordingly, it is predicted that using this program will have a significant effect on elderly people in blind spots who have difficulty accessing mental health-related programs due to social status or economic social class. In any case, this study is judged to be valuable in that it has proven the effectiveness of the convergence program developed by the researchers.

Lastly, the limitations of this study and suggestions for follow-up research are as follows.

First, because this study was conducted targeting elderly cultural program participants in the Gangnam region, it is somewhat difficult to extend the interpretation of the results of this study to elderly people in other regions. Therefore, if follow-up research is conducted to confirm the effectiveness of the same cultural program in many other regions, the reliability of the results of this study will be increased.

Second, because this study was conducted during the COVID-19 pandemic, those who did not participate in the entire 25-week program due to COVID-19 infection or health reasons were excluded, so the results are expected to be slightly different from expectations. However, the results of this study showing that despite the COVID-19 pandemic had a positive effect on the psychology of the elderly in terms of gender and age can be considered an achievement of this study.

Third, this study has a limitation in that it was not possible to completely regulate the control group. It was difficult to marage all of the social life of the elderly. The elderly who did not participate in the 25-week convergence arts program were formed as a control group, but it was difficult to totally regulate the control group after the preliminary investigation.

Accordingly, I believe that if the follow-up study is conducted at a specific institution such as a Silver Town or a nursing hospital, it will be a study that can clearly compare groups.

This study can be said to be a convergence arts program that overcomes the limitations of existing music programs such as simple singing, listening, and playing. The convergence program can be said to be different from existing programs in that it produces videos using songs that the subjects themselves remember and prefer, making each episode interesting.

In particular, this program helped the elderly easily adapt to the rapidly changing environment and digital media, and music and video were proven to be effective tools for improving their quality of life and reducing loneliness, giving them happiness and enjoyment. Based on the results of this study, it is believed that through convergence art activities, elderly people can reflect on their lives and make changes so that they can live the present in a meaningful and positive way.

ACKNOWLEDGEMENTS

Thank you CellMed for helping us write our thesis.

CONFLICT OF INTEREST

There are no other relationships or activities that could appear to have influenced the submitted work.

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APPENDIX

Appendix_Table 1. Measurement tools (Loneliness)

No.	Item	pre		post	
		M	±*SD*	*M*	±*SD*
1	There are many people around me with whom I can communicate.	2.93	0.92	2.65	0.84
2	I feel like I am causing inconvenience to my children.	2.13	1.03	2.04	1.05
3	I feel resentful toward my daughter-in-law or son.	1.90	1.12	2.00	1.01
4	My children tend to respect my opinions.	3.19	1.34	2.48	1.15
5	I am not useless.	2.19	1.27	2.35	1.25
6	I have disagreements with my children.	2.32	1.00	2.28	1.05
7	Living long feels like a sin.	2.31	0.96	1.81	0.89
8	My opinions about household chores are ignored.	1.91	0.53	1.88	0.86
9	I talk often with my children.	2.61	0.95	2.44	0.58
10	My children understand me.	2.39	1.05	2.12	0.59
11	Even as I get older, I am a valuable person in my family.	2.31	0.81	2.08	0.62
12	My children are reluctant to talk to me.	2.19	0.97	2.04	0.92
13	I feel uncomfortable living with my children.	2.32	0.97	2.22	1.05
	Total	1.92	.66	1.55	.73

Appendix_Table 2. Measurement tools (Well-being)

No.	Item	pre		post	
		M	±*SD*	*M*	±*SD*
1	To be particularly excited or interested in something.	1.4	0.5	1.2	0.4
2	I was so restless that I couldn't sit in the chair for long.	1.9	0.2	2.0	0.2
3	Have you ever felt proud when you received praise from others when you did something?	1.0	0.2	1.1	0.3
4	I felt very lonely or far away from other people.	1.9	0.3	2.0	0.0
5	I felt very lonely or far away from other people.	1.2	0.4	1.0	0.2
6	It was boring.	1.7	0.5	1.9	0.3
7	It felt the best.	1.3	0.5	1.2	0.4
8	I was depressed or very unhappy.	1.8	0.4	1.8	0.4
9	I felt like things were going my way.	1.4	0.5	1.3	0.5
10	You felt offended because someone criticized you.	1.5	0.5	1.7	0.5
	Total	1.23	.29	1.11	.39

Appendix_Table 3. Measurement tools (Happiness index)

No.	Item	pre		post	
		M	±*SD*	*M*	±*SD*
1	I exercise vigorously more than three times a week. (e.x. brisk walking, cycling, aerobics, soccer, jumping rope)	4.59	0.78	4.07	1.16
2	I feel energetic in my life.	4.12	0.77	3.70	0.86
3	There is someone who can help me when I am in trouble.	4.00	0.78	3.96	0.75
4	I constantly strive for self-development.	4.18	0.80	3.89	0.84
5	I enjoy my work (study).	4.24	0.55	4.00	0.73
6	I do muscle strengthening exercises about 3 times a week.	4.59	0.92	3.52	1.33
7	I believe that I can cope well even if I encounter difficult situations.	4.00	0.70	3.96	0.75
8	I have someone who trusts my thoughts and feelings.	4.06	0.74	4.04	0.64
9	I strive to achieve my life goals.	3.82	0.80	4.11	0.74
10	I am satisfied with what I am doing (study).	3.71	1.14	3.74	1.05
11	I avoid being underweight or overweight and maintain a healthy weight.	3.88	0.91	3.74	0.85
12	I feel confident in my abilities.	3.88	0.69	3.59	0.88
13	I like myself despite my flaws.	3.76	0.74	3.78	0.74
14	My family makes me feel loved.	4.53	0.51	3.93	0.95
15	I enjoy activities that stimulate my thinking and increase my knowledge (e.g. reading, discussions and liberal arts programs, continuing education programs)	4.29	0.76	3.63	0.88
16	I am satisfied with the balance between work (study) and leisure activities.	3.94	0.81	3.44	0.88
17	I eat a variety of foods every day, including grains, vegetables, fruits, fish, meat, and dairy products.	4.41	0.78	3.96	0.75
18	I can manage negative emotions well.	4.00	0.60	3.74	0.59
	Total	2.03	1.67	2.74	1.39

Appendix_Table 4. Measurement tools (Quality of life)

No.	Item	pre		post	
		M	±*SD*	*M*	±*SD*
1	Are you satisfied with your role and position in the family?	4.06	0.91	4.23	0.98
2	Are you satisfied with your decision-making power within your family?	4.13	0.93	3.96	0.71
3	What do you think about family cohesion (attachment)?	4.31	0.96	4.08	0.93
4	Are you satisfied with yourself?	3.69	0.69	3.92	0.97
5	How do you feel about the support of your family, someone you can trust and rely on	4.38	0.83	4.23	0.94

	in times of trouble?				
	Total	3.20	1.08	2.76	1.50
6	How do you feel about your health?	3.81	0.96	3.88	0.94
7	What do you think about marriage (spouse relationship)?	4.07	1.04	4.12	0.96
8	Are you satisfied with your economic activities (employment)?	3.52	0.95	3.71	0.90
9	Are you satisfied with the given educational conditions (ability to utilize information and resources)?	3.69	0.73	4.15	0.87
10	Do you think it is convenient to use transportation such as buses and subways?	4.32	0.70	4.58	0.89
11	Are you satisfied with the transportation expenses or senior citizen pension paid by your local office every month?	3.17	1.12	4.06	1.13
12	Are you satisfied with the country's policies for the elderly?	3.26	0.85	3.38	0.69
13	What do you think about your social activities?	3.53	0.80	3.62	0.75
14	Are you satisfied with your sex life?	3.10	0.93	3.00	0.71
15	Are you satisfied with your leisure activities (hobbies or recreational activities)?	3.53	0.94	3.65	0.93
16	What do you think about the state of your economy?	3.69	0.60	3.52	0.78
17	What do you think about society’s ideology toward the elderly?	3.24	0.57	3.48	0.94
18	Are you satisfied with using and accessing medical institutions such as hospitals and public health centers when you are sick?	4.31	0.54	4.04	0.82
19	How do you feel about your relationships with your neighbors?	3.59	0.62	3.91	0.72
20	Are you satisfied with your mobility for everyday life?	3.93	0.75	3.87	0.91
21	How do you feel about your relationship with your child?	3.90	0.93	4.09	0.96
22	How do you feel about your abilities at work?	3.55	0.98	3.50	0.85
23	What do you think about your own self-actualization (self-fulfillment)?	3.75	0.84	3.65	0.82
24	Are you satisfied with your housing arrangement?	4.03	0.67	4.04	0.82
25	How do you feel about your ability to cope with what lies ahead?	3.62	0.89	3.70	0.76
26	How do you feel about your relationships with your friends?	3.86	0.83	3.83	0.82
27	How do you feel about association with siblings or relatives?	3.62	0.85	3.65	0.71
28	How do you feel about your vitality (energy, stamina)?	3.55	0.94	3.70	0.92
29	How do you feel about reaching your life goals?	3.81	0.63	3.91	1.03
30	What do you think about safety from damage or accident risks that may occur in your surrounding living environment?	3.52	0.78	3.74	0.74
31	How do you feel about the fulfillment of your life?	3.93	0.79	3.96	0.92