

Influence of Musical Activity on the Embitterment and Psychological Well-Being of Nurses

SAGE Open
January-March 2023: 1–8
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DOI: 10.1177/21582440231156805
journals.sagepub.com/home/sgo


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Abstract

The global spread of the COVID-19 pandemic has increased the number of frontline medical staff complaining of problems such as anxiety, depression, and insomnia, thereby requiring urgent psychological support. Nurses are particularly exposed to various stressors and difficult environments, witnessing patients' pain, frustration, and death, while helping them recover. Music is known to be effective in inducing psychological stability by activating brain waves, relaxing the body, and alleviating negative reactions. This study examines how musical activities affect embitterment and psychological well-being among nurses and nursing students who suffer from various psychological difficulties. This study finds that musical activity helps nurses' psychological stability by lowering their embitterment index and increasing their psychological well-being. Further, the greater the music listening time is, the higher is the psychological well-being, indicating the necessity of increasing the music listening time and encouraging more musical activities for the psychological stability of nurses in the future.

Keywords

COVID-19, nurses, musical activity, embitterment, psychological well-being

The coronavirus disease (COVID-19) outbreak, which originated in 2019 in Wuhan, China (Tomlin et al., 2020; Worobey, 2001), has been spreading globally, with 318,684,834 confirmed cases and 5,518,343 deaths as of January 14, 2022, exhibiting a worldwide “pandemic” phenomenon reported to the World Health Organization (2020). Korea was no exception to this phenomenon, with the outbreak spreading alarmingly in Daegu, the third-largest city of South Korea in March 2019, causing anxiety among the central and local governments and the people, especially those who were working together to quarantine infected people (Her, 2020).

The medical staff has been playing a crucial role during this pandemic. However, the prolonged pandemic situation has intensified the physical fatigue and mental stress of medical staff (J. Lee et al., 2021; Tomlin et al., 2020). Among health care workers, nurses have been exposed to a variety of stress and difficult environments. Several studies indicated that those in the nursing field experience traumatic syndrome by witnessing patients' pain, frustration, and death while helping patients overcome their illness (Cooper et al., 2020; Tusaie & Dyer, 2004). In addition, accumulated fatigue from intensive work and hostile environments severely impact not only

nurses but also patients' safety (Barker, 2009; Y. H. Kim & Cho, 2002; J. H. Lee, 2006).

The situation is similar for nursing college students. College students majoring in nursing require in-depth knowledge of their major fields and the ability to apply them to clinical practice (Y. K. Yang et al., 2014; N. Y. Yang & Moon, 2013). Nursing college students have been shown to experience the same psychological anxiety and depression levels during clinical practice included in the nursing curriculum (Kanji et al., 2006; Prymachuk & Richards, 2007). Furthermore, research indicated that during clinical practice, nursing college students experience severe anxiety, depression, and stress situations because of younger age, less knowledge and experience, and status constraints that differ from those of nurses (Han et al., 2007; Park et al., 2007; Y. J. Son et al., 2010; Y. K. Yang et al., 2014; N. Y. Yang & Moon, 2013).

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In addition, nursing college students experience the same stress as general college students because of academic stressors such as tests and grades, future anxiety resulting from employment or career problems, interpersonal fatigue caused by conflicts with people around them, and economic challenges such as tuition and living expenses (Ahaneku et al., 2000; Y. J. Kim et al., 2008; Misra & Castillo, 2004; Misra et al., 2000; Vázquez & García-Vázquez, 1995; Weidner et al., 1996). In sum, the mental fatigue and stress levels of nursing college students are not less than those of practicing nurses.

The psychological pressures and anxiety among nurses and nursing college students, who are exposed to harsh and stressful situations, often lead to negative perspectives about all other situations, which can lead to anger, self-blame, physical pain, and lethargy (Kanji et al., 2006; H. M. Son et al., 2001). Linden (2003) defined these psychological phenomena as “*embitterment*.” While psychologically assessing people in Germany after a decade of German reunification, Linden noted a surge in the number of psychiatric problems in people experiencing sudden unemployment, job changes, and discrimination and unfairness, and found that these symptoms differed from posttraumatic stress disorder (PTSD), conventional DSM-IV adaptation disorder, or depression. Instead, Linden viewed this phenomenon as a reactive disorder with a deepening sense of depression and termed it *post-traumatic embitterment disorder (PTED)*.

Psychological well-being is an emotional attitude that reflects the psychological and social stability of an individual (M. S. Kim et al., 2001). A high level of psychological well-being of a person indicates that the person has a purpose and meaning to their life, a positive attitude that embraces self-worth, and can alleviate negative emotions such as depression by actively interacting with the environment (Liu et al., 2009; Ryff, 1989; Strauss et al., 2012). Therefore, promoting the psychological well-being of nurses experiencing physical fatigue, serious mental problems, and embitterment in the hostile and intense work environment is important, and entails designing various mechanisms that improve their psychological well-being. One of these measures is the mediation effect through music.

The literature related to nursing demonstrates that music—especially classical music, which stimulates brain wavelengths to induce psychological stability, relaxes the body, and alleviates the negative reactions experienced in life (Happell et al., 2013; Ji & Cho, 2017; Lai & Li, 2011)—has a positive effect on facets such as emotions and perceptions of human beings (Chong & Chong, 2009; Ploukou & Panagopoulou, 2018). Moreover, S. H. Kim (2002) contends that music therapy applied in the form of either passive music listening—such as through concerts, performances, or audio systems—or active

music behavior—including participation in church choirs and orchestras—affects emotional relaxation. Regarding the relationship between music activity participation and people’s well-being, Perkins et al. (2020) analyzed 46 research results extracted from 19 electronic databases through meta-analysis technique. The results confirmed that the subjective views of the participants to music had a positive effect on the participants’ mental well-being. Set against this background, this study seeks to determine how musical activities affect embitterment and psychological well-being among nurses and nursing college students, who have been experiencing heavy workload and stress, especially during the ongoing COVID-19 pandemic.

Methodology

Participants and Procedure

This study conducted an online survey among college students majoring in nursing and nurses who were working at general hospitals for 1 to 5 years to evaluate the impact of musical activities on embitterment and psychological well-being. Among the non-probabilistic sampling techniques, this study employed convenience sampling in selecting the research participants (Gall et al., 2003). The probability sampling method was not selected because of the difficulty in obtaining consent for participation in the study from nurses who were either under the COVID-19 emergency or in a medical institution. Therefore, medical schools and nursing colleges among universities located in Seoul were selected; subsequently, an online questionnaire with an invitation letter was e-mailed to students and nurses of University A and University B hospitals who agreed to participate in this study. Before sending the invitation letters to participants, every procedure of this study has been previously approved by an institutional review board (CMC IRB: MC20QISI0151/2020-3889-0001).

The invitation letter accompanying the online questionnaire stated that the research purpose, simple research procedures, and personal confidentiality were guaranteed and that the collected data would be used only for research purposes including a request for participants to encourage their classmates to participate in the study; the questionnaire could be viewed only if the legal and ethical issues were agreed upon by clicking “I agree.” The study’s sampling period was 2 weeks—from November 23, 2020, to December 11, 2020. Data for a total of 357 respondents, 199 nursing college students (55.7%) and 158 nurses with 1 to 5 years of experience (44.3%), were finally analyzed and reflected in the study results. Due to privacy issues, it is difficult to know how many people the invitation letter was delivered to, so the exact response rate cannot be known.

Table 1. Reliability of Psychological Well-Being Scale Among the Nursing Students and Nurses in Korea.

Factor	<i>n</i>	(α)
Autonomy	7	.81
Environmental mastery	7	.76
Personal growth	7	.69
Positive relations with other	7	.84
Purpose in life	7	.83
Self-acceptance	7	.84
Total	42	.94

Measurement Instrument

This study applied the psychological well-being scale (PWBS), which has been recognized in the extant literature as a suitable tool for measuring psychological well-being. In this study, a 42-item version of Ryff (1989) that H. R. Lee et al. (2014) translated into Korean was used. The questionnaire comprised six factors—autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance—with each factor having seven questions, thereby totaling 42 questions. Each question was designed to be measured using a 7-point Likert scale (1 = strongly agree to 7 = strongly disagree), and the range of scores available was from 42 to 294, implying that the higher the score, the higher was the psychological well-being. The original version of Ryff (1989) had Cronbach's values of .86 to .93, while in this study, the Cronbach's alpha value for a total of 42 questions was .94 (see Table 1).

This study also used a PTED self-measurement tool developed by Linden et al. (2009) that Shin et al. (2012) translated into Korean. The tool comprised assessing 19 questions to evaluate the embitterment response to negative life events on a 5-point Likert scale: 0 (not true at all), 1 (hardly true), 2 (partially true), 3 (very much true), and 4 (extremely true). The degree of embitterment was calculated by adding all the scores displayed by the participants and dividing them by 19. A score ranging from 0 to 1.6, 1.6 to 2.5, and above 2.5 reflected no embitterment, continuous embitterment, and severe embitterment, respectively. Regarding the reliability of PTED, the Cronbach's alpha value of the original study was .93 (Linden et al., 2009), that of Shin et al. (2012) was .93, and that of this study was .94.

Eight questions, comprising three multiple-choice questions and five open-ended questions, were used to assess participants' demographic characteristics. The questions were divided into two areas: (1) personal—gender, age, and current status (student or nurse) and (2) music—musical activity (yes or no), type of musical activity, duration of music education, duration of listening to music (daily), and the influence of music on

embitterment or psychological well-being (expressed in the form of percentages).

Data Analysis

This study employed the PASW Statistics 24.0 (SPSS 24.0 for Window) program to analyze quantitative data in questionnaires to measure the impact of nurses' musical activities on embitterment and psychological well-being. First, 19 questions to evaluate nurses' embitterment index and 42 questions to measure psychological well-being were analyzed using mean and standard deviation. Next, the influence of the general characteristics and musical activities on participants' embitterment or psychological well-being were compared and analyzed between groups through the t-test. The demographic information was reported in terms of frequencies and percentages, except for age, duration of music education, and daily music listening time, which were analyzed in terms of mean, standard deviation, and range because the response options to these three questions were interval level.

Results

The participants of this study were 199 college students majoring in nursing and 158 nurses who were working at general hospitals for 1 to 5 years (see Table 2). There were 328 females (92%) and 29 males (8%) and the average age of all participants was 24.24 ($SD = 2.98$, range: 19–39). Of the total, 189 participants engaged in musical activities (52.9%), whereas 168 participants (47.1%) did not. Among participants who engaged in musical activities, the proportion of nursing college students ($n = 114$, 60.3%) was higher than that of nurses ($n = 75$, 39.7%). The average period of music education of participants, excluding music class during regular school hours, was 5.06 years ($SD = 3.74$), and the average duration of music appreciation was 1.78 hours per day ($SD = 1.51$). Regarding types of musical activities, the most common musical activity was general choir ($n = 60$, 30.5%), followed by church choir ($n = 38$, 19.1%), orchestra ($n = 28$, 14.1%), band ($n = 22$, 11.1%), church accompanist ($n = 19$, 9.6%), amateur performing group ($n = 18$, 9.1%), guitar ($n = 5$, 2.5), recorder ($n = 3$, 1.5), music appreciation group ($n = 2$, 1.0), and Samulnori (Korean Traditional Music) ($n = 2$, 1.0).

Table 3 reports the difference between embitterment and psychological well-being of all participants according to musical activities.

The findings indicate that the mean of the embitterment index of participants with musical experience was 30.66 ($SD = 17.50$), which was less than that of the participants without musical activity ($M = 32.12$,

Table 2. Demographic Information of Participants.

Profiles	Frequency (%)
Gender	
Female	328 (92)
Male	29 (8)
Age (years)	
19–22	120 (33.7)
23–26	154 (43.2)
27–29	71 (19.9)
30 and above	11 (3.0)
Status	
Registered nurses	158 (44.3)
Students	199 (55.7)
Musical activity	
Yes	189 (52.9)
No	168 (47.1)
Duration of listening to music (daily)	
Less than 30 minutes	86 (24.5)
– 1 hour	99 (28.2)
– 2 hours	78 (22.2)
– 3 hours	55 (15.7)
– 4 hours	15 (4.29)
– 5 hours	8 (2.27)
– 6 hours and above	10 (3.5)
Type of musical activity (multiple responses)	
General choir	60 (30.5)
Church choir	38 (19.1)
Orchestra	28 (14.1)
Band	22 (11.1)
Church accompanist	19 (9.6)
Amateur performing group	18 (9.1)
Guitar	5 (2.5)
Recorder	3 (1.5)
Music appreciation group	2 (1.0)
Samulnori (Korean traditional music)	2 (1.0)

$SD = 17.38$), but the difference was not statistically significant.

By contrast, the mean of the psychological well-being index of the participants with musical activity was 201.55 ($SD = 28.85$), which was higher than that of the participants without musical activity ($M = 195.40$, $SD = 25.420$), with a statistically significant difference ($t = 2.68$, $p < .05$). This result indicates that the experience of musical activity has a positive effect on the psychological well-being regardless of nursing college students and nurses.

Regarding the difference in the six factors of psychological well-being among participants with musical activity, the results indicate that the positive relationships with others ($t = 3.09$, $p < .01$), personal growth ($t = -2.52$, $p < .05$), and purpose in life ($t = -2.50$, $p < .01$) display statistically significant differences according to musical activities, while environmental mastery, self-acceptance, and autonomy do not exhibit any statistically significant differences.

Table 4 reports the result of comparing embitterment, PWBS, music listening duration, and influence of music according to the current status of nursing college students and nurses. The findings reveal that the mean of the embitterment index of the nursing college students was 28.77 ($SD = 16.04$), which was less than that of the nurses ($M = 34.78$, $SD = 18.49$), and there was a statistically significant difference ($t = 3.28$, $p < .01$). Further, the mean of the psychological well-being index of the nursing college students was 201.82 ($SD = 27.50$), higher than that of the nurses ($M = 194.61$, $SD = 26.97$), and with a statistically significant difference ($t = 2.47$, $p < .01$). In sum, the finding that nurses have a higher depression index and lower psychological well-being than those of nursing college students indicates that nurses have more psychological problems than nursing college students.

The mean duration spent listening to music during the day by nursing college students was 131.17 minutes ($SD = 102.26$) per day, while that by nurses was 76.99 minutes ($SD = 62.12$) per day. In addition, the independent t-test indicated a statistically significant difference in music listening duration between nursing college students and nurses ($t = 5.82$; $p < .05$). This finding implies that nursing college students spend more time listening to music during the day compared with nurses.

In addition, the difference in the score of the influence of music on the embitterment or psychological well-being, expressed in percentage (%), illustrates that nursing college students averaged 65.96 ($SD = 23.47$), higher than the nurses' average of 59.57 ($SD = 24.10$), with a statistically significant difference ($t = 2.51$; $p < .05$). In other words, the importance of the effect of music on psychological stability was thought to be greater by nursing college students than by nurses.

Discussion and Conclusion

This study investigated how musical activity affects the level of embitterment and psychological well-being of nurses and nursing college students who currently suffer from various physical and mental challenges arising from the COVID-19 pandemic. Further, this study confirmed that music can be a valuable tool for alleviating psychological instability and improving the psychological well-being of nursing college students and nurses like previous studies (Happell et al., 2013; Ji & Cho, 2017; Lai & Li, 2011; Ploukou & Panagopoulou, 2018).

The findings in this study indicated that nearly half of nurses and nursing college students were experiencing psychological instability, with 32% and 17% of participants experiencing continuous and severe embitterment, respectively. This result confirmed the findings of J. Lee

Table 3. Two Independent Sample t-Tests for Embitterment and Psychological Well-Being According to Musical Activity.

Factor	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i> -Value
Embitterment				-0.79	.432
Yes	189	30.66	17.50		
No	168	32.12	17.38		
Psychological well-being				2.13*	.034
Yes	189	201.55	28.85		
No	168	195.40	25.42		
Positive relations with others				3.09**	.002
Yes	189	38.53	5.43		
No	168	36.69	5.76		
Personal growth				2.52*	.012
Yes	189	34.23	5.25		
No	168	32.90	4.65		
Purpose in life				2.50**	.007
Yes	189	34.68	6.22		
No	168	33.06	6.00		
Environmental mastery				1.78	.076
Yes	189	33.11	5.64		
No	168	32.08	5.22		
Self-acceptance				0.948	.344
Yes	189	33.05	6.67		
No	168	32.40	6.06		
Autonomy				-0.475	.645
Yes	189	27.96	6.50		
No	168	28.26	5.18		

* $p < .05$. ** $p < .01$.

Table 4. Two Independent Sample t-Tests for Embitterment, Psychological Well-being, Music Listening Time, and Influence of Music According to Current Status.

Factor	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i> -Value
Embitterment				-3.28**	.001
Students	198	28.77	16.04		
Nurses	156	34.78	18.49		
Psychological well-being				2.47*	.014
Students	198	201.82	27.50		
Nurses	156	194.61	26.97		
Music listening time				5.86**	.000
Students	198	131.41	102.06		
Nurses	156	76.99	62.12		
Influence of music				2.51*	.012
Students	198	65.96	23.47		
Nurses	156	59.57	24.10		

* $p < .05$. ** $p < .01$.

et al. (2021) and Ali et al. (2021) who found that medical staff, including nurses and nursing college students, complained of psychological problems such as anxiety, depression, and insomnia during the COVID-19 pandemic and needed urgent psychological support.

Regarding embitterment and psychological well-being according to musical activity, participants with current musical activity had a lower embitterment index and higher psychological well-being than participants

without musical activity regardless of nursing college students and nurses. This finding is consistent with those in studies of Chong and Chong (2009), Ji and Cho (2017), Perkins et al. (2020), and S. H. Kim (2002) who demonstrated that musical activity is effective in inducing psychological stability, relaxing the body, and alleviating negative reactions such as loneliness, depression, and anxiety experienced in life. This finding implies that encouraging active musical activities to improve

psychological well-being and alleviate the depression of nurses and nursing college students is necessary.

Among the six factors of the participants' psychological well-being according to their musical activity, positive relations with others ($t = 3.09, p < .01$), personal growth ($t = 2.52, p < .05$), and purpose in life ($t = 2.50, p < .01$) displayed statistically significant differences according to musical activities, whereas environmental mastery, self-acceptance, and autonomy exhibited no statistically significant differences. This finding is important because the results of previous studies match with ours in the following ways: (1) the high score of the factor "positive relations with others" demonstrates that respondents have meaningful relationships with others, which aligns with a previous study titled "Music makes the people come together" (Boer, 2009); (2) the high score of the factor "personal growth" indicates that respondents feel that self-development can be achieved through new challenges and experiences, which aligns with the findings of Custodero (2002) that musical engagements lead children to "physical, social and cognitive challenge" (p. 3); and (3) the high score of the factor "purpose in life" means that respondents are more goal-oriented and pursue a meaningful life, which aligns with the findings in many previous studies indicating that musical activities lead to a meaningful life (Dillon, 2007; Kurakin, 2010; Vallerand, 2012). This finding implies that musical activities are particularly effective in forming good relationships with others and improving psychological stability through personal life goals and self-development.

Comparing nursing college students and nurses, this study provided more evidence that reflects the influence of musical activities on psychological well-being and embitterment in the following ways. First, the finding that nurses have a higher level of embitterment and lower psychological well-being than nursing college students indicates that nurses' psychological and emotional instability is more serious. Second, the finding that nursing college students had a higher rate of musical activity participation, longer music listening time implies that music activities could influence the nurses' psychological and emotional stability, in that nursing college students had lower embitterment and higher psychological well-being than nurses. Third, in the same context of the above findings, the confidence level about the effect of music on psychological stability is greater among nursing college students than among nurses. These results are meaningful in helping understand which musical activities positively influence psychological stability.

The findings of this study underlined the importance of creating an environment where nurses and nursing college students can easily access and gain exposure to musical activities, such as listening to music, attending or participating in concerts or performances; through these

measures, music can serve as an effective tool to improve nurses' and nursing college students' psychological well-being and assuage their embitterment. The limitations of this study are as follows. First, the generalization of the results of this study should be careful because this study used non-probabilistic sampling. Second, the results of this study cannot confirm a cause-effect relationship between music activity and PWB/PTED in that there was not any variable control or intervention in this study. For further research, probabilistic sampling is necessary for generalization, and an experimental study is also necessary to confirm a cause-effect relationship between music activity and PWB/PTED with variable control or intervention of music on PWB/PTED.


Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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