



Event Scale Evaluation of Medical Staff Against Dementia Patients Receiving Music Therapy

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Abstract

Elderly with behavioral and psychological symptoms (BPSD) have increased in nursing homes. For current research, 7 patients with BPSD treated by music therapy sessions for 3 months were evaluated using BPSD25 Questionnaire (BPSD25Q). Furthermore, Impact of Event Scale-Revised (IES-R) was conducted by health care staff who take care of each patient. As a result, four items showed decreased values of both BPSD and IES-R, which are wandering/restlessness, going out without permission, reversal of day and night, and unclean behavior. BPSD for patients and IES-R for staff showed the improvement values as 7.28 to 7.0, and 7.14 to 7.0, respectively.

Keywords

Behavioral and Psychological Symptoms, BPSD25 Questionnaire, Impact of Event Scale-Revised, Music Therapy Session, Gottfries-Brane-Steen (GBS) Dementia Rating Scale

Abbreviations

BPSD: Behavioral and Psychological Symptoms; BPSD25Q: BPSD25 Questionnaire; IES-R: Impact of Event Scale-Revised; GBS: Gottfries-Brane-Steen

Introduction

In recent years, the elderly population has increased in Japan and developed countries, and dementia patients have been more living in nursing homes [1]. From the perspective of the health care staff in the facilities, management with dementia patients seems to be rather tough work [2]. Various burdens have become an issue, where evaluating the situation of behavioral

and psychological symptoms of dementia (BPSD) would be crucial [3]. With adequate generalized information, staff can respond to the elderly appropriately [4]. Among these circumstances, some kinds of clinical treatments can be applied to the patients with BPSD [5]. They include effective pharmacological agents for BPSD, certain measures of psychotherapy, or music therapy as one of the complementary and alternative medicine

(CAM) methods [6].

Authors and collaborators have continued clinical sessions and research of music therapy for years. We presented a music therapy session that was requested by Osaka city before. At that time, we continued a half-year intervention with the application of the Gottfries-Bråne-Steen (GBS) dementia rating scale [7]. GBS scale is divided into four subscales, which are measuring motor, intellectual and emotional functions, and different symptoms characteristic for dementia [8,9]. As a recent rating scale, Behavioral and Psychological Status Questionnaire for Dementia (BPSD25Q) has been applied in the nursing homes [10]. Using BPSD25Q, the working staff can evaluate the detailed situation of BPSD of the patient and respond to various symptoms in each patient.

In addition to evaluating the patients by the staff, it is important to evaluate the burden of the staff who may always receive various stressors from working for elderly with BPSD. In order to evaluate the degree of usual psychological stress in the ordinary work for the medical staff, Impact of Event Scale - Revised (IES-R) has been known as a useful and adequate measure [11]. Authors et al. have been involved in actual music therapy sessions in the nursing home for long, and then we have set up the research protocol of music therapy. The general progress of the current intervention and related discussion will be presented in this article.

Subjects and Methods

This study outlines the implementation, evaluation, and summary of music therapy in the method of listening in a nursing home. Subjects were seven elderly people (ages 79 to 94 years old, average age 88) residing on the same floor, and 5 care staff (ages 27 to 60, average age 38, male/female = 2/3). The intervention study took place over a three-month period from September to December 2024.

Methods involved listening to soothing music for about 40 minutes 3 times at breakfast, lunch, and dinner. The purpose would be psychologically to stabilize the subjects during meals with music. The music was quiet background music from Japan and Northern Europe that can possibly calm the human

mind and body. The elderly had mild dementia, and the changes were evaluated before and after the intervention using the BPSD25Q [12].

The staff were checked for the degree of stress caused by their work, compiled, and evaluated. The used questionnaire was the IES-R [13]. Current five staff members were asked to complete the survey anonymously twice. There were six basic questions, where Q1: Did you feel irritable?, and Q4: Did you feel depressed and unable to cheer up no matter what happened? The answers were on a five-point scale (0-4), and total points ranged from 0-24. The stressful degree was evaluated as 3 categories, in which 0-4 pts for no problem, 5-10 pts for possible stressful, and >11 pts for required careful attention.

Results

In addition to observing the change in the severity of BPSD in seven elderly (a-g), we also observed the degree of work burden, as measured by the IES-R score of the staff. The results are arranged in a corresponding manner to the **Fig-1A** (upper) and **Fig-1B** (lower). Among these, in case b, BPSD score decreased from 60 to 43, and the IES-R burden decreased from 41 to 29. In three people (c, e, g), only the IES-R score decreased.



Fig-1: BPSD in Patient and IES-R in Staff

Upper: Severity of the patient

Lower: Work burden of staff

Among 25 items in BPSD, four items showed decreased values of both BPSD and IES-R, which are i) wandering/restlessness, ii) going out without permission, iii) reversal of day and night, and iv) unclean behavior. In the categorical evaluation method of patient behavior, there are groups for hyperactivity score, hypoactivity score, and lifestyle-related score. Among these, the lifestyle-related score includes six items: reversal of day and night, abnormal eating activity, resistance to care, unclean behavior, carelessness with fire, and losing things (**Table-1**). When observing generally overall scores, patients showed improved BPSD score from 7.28 to 7.00, and staff showed improved burden score as working burden from 7.14 to 7.00.

From staff points of view, the overall IES-R burden showed a downward trend, from 22.8 to 20.48. We analyzed the changes in the IES-R scores for five staff members. Improvements were seen in five of the six items (**Table-2**). A significant decrease was observed in the total score, from 9.0 to 6.0 points.

Table-2: Changes in IES-R score

6 items Ques (#)	Before (average)	After (average)
1	2.2	1.6
2	0.6	0.8
3	1.6	1.2
4	1.6	1.0
5	1.8	1.0
6	1.2	0.4
Total	9.0	6.0

Discussion

Concerning various activities of music therapy, we have performed actual sessions and related research so

far. They include additional combined research with bioresonance measurement of vibration medicine [14], oxytocin measurement, Ayurvedic medicine with head massage [15,16], and so on [17,18]. For these research, various subjects or patients were included such as Autism Spectrum Disorder (ASD), dementia, mild cognitive impairment (MCI), dry mouth [19], elderly, younger generation with intellectual problem, and so on.

The BPSD25Q was useful because caregivers can use and evaluate easily with short time during their daily work [10]. As BPSD exam started with 27 items, it has been widely used for 25 or 13 items associated with simple and useful version [12]. In this study, total score of 25 items showed the improvement in the burden of 4 out of 7 cases. Case b usually sang nursery rhymes and songs, and showed the improvement of severity and burden. It may suggest clinical effect of the current intervention. Case c, e, and g showed the reduction of the burden. When the changes in BPSD were also compared, certain evidence of improvement was found in wandering, restlessness, reversal ADL of day and night, and unclean behaviors.

As evaluation method for dementia and MCI, BPSD has been useful and reliable for years. In the latest research, the purpose was to investigate the association between pain degree and BPSD cases with dementia [20]. As a result, significant positive relationship was found between pain degree and some problems including depression (odds ratio, OR 2.11), aggression (1.07), and agitation (OR 1.17). In contrast, negative relationship was found between pain and wandering (OR 0.77). This perspective suggests the importance of further investigation for interventions for pain and BPSD evaluation.

Table-1: Comparison of Life-related Score of BPSD and IES-R

Problems	BSPD Score		IES-R Score	
	Before	After	Before	After
Day and Night Reversal	3.14	2.28	2.57	2.28
Abnormal Eating Activity	0.57	1.40	1.14	1.57
Resistance to Nursing Care	1.57	1.40	1.28	1.57
Unclean Behaviour	2.00	1.85	1.80	1.42
Fire Disposal	0.00	0.00	0.00	0.00
Get Rid of Things	0.28	0.00	0.28	0.00
Total of Life-Related Score	7.28	7.00	7.14	7.00

The IES-R was initially applied to the fields of psychology and nursing [21]. Since then, its scope of application has expanded to include the assessment of stressful work environments [22]. In this study, 6 items of IES-R (IES-R K6) were applied, where 2 samples showed “I felt watchful or on-guard” and “I tried not to think about it” [23]. In this study, caregivers could visualize changes in stress levels in both groups by listening to limited audio sources together with the elderly [24]. Furthermore, the study seemed to be meaningful and useful, because caregivers had opportunity to consider adequate ways to utilize music.

The study certainly has some limitations. However, listening to music may attract the interest of the elderly, and it may bring meaningful response when used sustainably. COVID-19 pandemic has given enormous impact for years, and then elderly care facilities have to respond to them with various aspects. Medical staff are extremely physically and mentally fatigued with unsatisfactory circumstances.

In summary, the purpose of this study is to quantify the state of BPSD, to share the changes among caregivers, and to lead to appropriate measures. Reducing the severity of BPSD will lead to reducing both the mental and physical burden of caregivers. We hope that listening to music will help caregivers respond more effectively.

Conflict of Interest

The authors have read and approved the final version of the manuscript. The authors have no conflicts of interest to declare.

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