

# Patient-centered Approach in Closed Psychiatric Wards: The Curative Power of Relaxing Music Chosen by Patients

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## ABSTRACT

**Background:** Psychiatry is changing as medicine adopts a patient-centered approach. This model of care places greater emphasis on the patients' involvement in determining the goals of their treatment and the nature of their care. This study offers a non-verbal patient-centered intervention by using relaxing music chosen by patients in a closed psychiatric ward to achieve reduction in levels of stress and psychomotor agitation.

**Method:** Participants, patients in closed wards, entered a seclusion room whenever they showed psychomotor agitation, overwhelming stress or physical and verbal aggression. While in the seclusion room, participants in the research group (n=24) were exposed to relaxing music of their choice whereas the comparative group (n=28) did not receive any sensory stimulation. The participants filled out the Visual Analogue Scale to measure their emotional state before and after this experience while the staff filled out the Behavioral Activity Rating Scale.

**Results:** Results show significantly higher emotional calm and prominent reduction in psychomotor agitation among the research group in comparison with the comparative group.

**Conclusions:** Relaxing music chosen by patients has a positive effect on their emotional state and behavioral activity and may therefore serve as an alternative sensory intervention before patients reach violent situations that require restraint.

## INTRODUCTION

Patient-centered health approach is based on deep respect for patients as unique individuals, and on the obligation to care for them on their terms as much as possible. Accordingly, patients are listened to, informed, respected, and involved in their own care, and their wishes are honored during their health care journey (1, 2). This approach is also adopted in psychiatry, thus changing the balance of authority and responsibility within the doctor-patient relationship and incorporating shared decision making between the clinician and the patient, particularly when it comes to treatment (e.g., 3, 4). This study offers a non-verbal patient-centered intervention by using relaxing music chosen by patients in a closed psychiatric ward in order to improve their experience in the ward.

Patients who are hospitalized in a closed psychiatric ward and experience psychomotor agitation or violence towards themselves or others, must receive treatment to calm them down (5). Treatment options that include talk therapy and the use of drugs do not always achieve sufficient relaxation and the patient can still be at risk of harming himself or others, eventually requiring seclusion (6) and restraint (7). Moreover, studies show that the nursing staff in closed wards occasionally use restraining measures even when patients do not exhibit obvious signs of violence (8) thus unnecessarily intensifying the traumatic experience of seclusion and restraint. Consequently, alternative treatments have been suggested to prevent the use of physical means of restraint (9).

Playing relaxing music to people who are hospitalized has been found to have a positive effect. Research suggests that relaxing music improves the overall behavior

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of elderly people suffering from dementia (10-12) and calms PTSD patients (13, 14). A positive effect has also been found in physiological indices, perception of pain and quality of sleep among premature babies, infants and children (15-17), in terminally-ill patients (18, 19), and in patients prior to surgery (20, 21).

Gaston (22) was among the first researchers who attempted to define relaxing music. He defined it as music that encourages a dreamlike mood, contains quiet, simple rhythm repeated over and over again in the same style and with sustained melody. Other researchers later adopted this definition in their research with the addition that relaxing music should be at a legato tempo and a uniform rhythm at the pace of 60-80 beats per minute (23-25). Relaxing music is considered effective in decreasing the activity of the sympathetic nervous system by reducing the arousal of the central nervous system (26). It is assumed that this effect is achieved through synchronization between the frequencies of body rhythm and musical rhythm (27, 28).

Studies that focus on using music for stress reduction emphasize the importance of self-selected music. Stevens (29) reported that slow, arrhythmic music, that otherwise meets all criteria of relaxing music, may appear foreign or frightening to patients undergoing surgery, and therefore familiarity with the music selections may be important for producing optimal relaxation. fMRI studies (e.g., 30) and other studies have also have shown that listening to self-selected music is beneficial in reducing anxiety (31, 32) and agitation (33-35).

To date, few studies have examined the effect of relaxing music in psychiatric wards. In one study, schizophrenic patients were asked to listen to soothing harp music that was selected by the researchers 40 minutes before bedtime, at a tempo of 52 beats per minute and without dynamic changes. Findings showed that the sleep quality of patients in the research group improved after hearing the music as compared to the comparative group. The soothing music created a distraction which reduced the hormonal activity and the activity of the sympathetic nervous system through decreased levels of norepinephrine, and as a result, the level of depression and anxiety decreased (36). Another study examined the effect of relaxing music on patients suffering from major depression. The music was chosen by the participants from a variety of musical pieces offered by the researchers and was played daily for 30 minutes for the duration of two weeks. The findings pointed to a gradual and cumulative decrease in depression scores in the two weeks following

the experiment (37). When patients were asked how seclusion could be made easier to bear, they mentioned listening to music as a relaxation method to combat the anger, frustration and resentment that is commonly felt during seclusion (9, 38). In another study, patients suggested activities involving relaxing music as a less restrictive alternative to seclusion (39).

Due to the paucity of studies on the effect of relaxing music in psychiatric wards, the aim of the present study was to examine the effect of relaxing music on patients hospitalized in a closed psychiatric ward when they themselves chose their favorite relaxing music. The hypothesis was that having patients stay in a seclusion room and listen to relaxing music that they had chosen would lower their psychomotor agitation. On this basis, the research hypotheses are as follows:

1. Exposure of patients in a seclusion room to relaxing music that they had chosen will result in more prominent calming effect with more significant stress reduction as measured by *Visual Analogue Scale (VAS)*, compared to patients who were not exposed to music in the seclusion room.
2. This exposure will also result in more significant reduction of psychomotor agitation among research group patients as measured by *Behavioral Activity Rating Scale (BARS)*, compared to patients who were not exposed to music in the seclusion room.

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## METHOD

### PARTICIPANTS

Fifty-two patients hospitalized in a closed psychiatric ward at the Kfar Shaul Psychiatric Hospital in Jerusalem, Israel, participated in the study. This ward treats acute situations in voluntary and involuntary hospitalizations and in patients who are in for evaluation or have been court ordered for evaluation. The criteria for inclusion in the study were any male patients who are hospitalized in closed ward A and are willing to go into the seclusion room and participate in the study. The criteria for exclusion from the study were any male patients who are hospitalized in closed ward A and are not willing to participate in the study and/or show signs of distress due to participation in the study.

Of the participants, 19 (36.53%) had been diagnosed as suffering from paranoid schizophrenia (F20.0), 14 (26.92%) from schizoaffective disorder (F25), 13 (25%) from undifferentiated schizophrenia (F20.3), one (1.92%) from catatonic schizophrenia (F20.2), one (1.92%) from

schizotypal disorder (F21), two (3.84%) from bipolar affective disorder (F31), one (1.92%) from mental and behavioral disorders due to multiple drug use (F19) and one (1.92%) from obsessive-compulsive disorder (F42). All participants were male, average age of 36.50 (SD=12.50). Forty-three participants were Jewish (82.69%) and 9 Arab (17.30%). Thirty-six participants were unmarried (69.23%), eight married with children (15.38%), three divorced without children (5.76%), two divorced with children (3.84%), two married without children (3.84%) and one unmarried with children (1.92%).

The participants were randomly divided into two groups: a research group of 24 patients (46.15 %) for whom a disc with relaxing music of their choice had been prepared ahead of time and played during their stay in the seclusion room, and a comparative group of 28 patients (53.84 %) for whom a disc was not played in the seclusion room. Preliminary analysis found no significant differences between the two groups regarding the background variables and the average number of hospitalization days at the time of the study.

## TOOLS

*Visual Analogue Scale (VAS)*. The purpose of VAS is to translate feelings into a visual dimension which can be measured (in this case, the length of a line). VAS is usually a horizontal line, 100 millimeter in length, anchored by contrasting descriptors at each end. Study subjects are asked to mark with a writing tool or their finger, a point on the continuum which reflects their emotional state at the moment. The VAS score is determined by the distance in millimeters from the left hand end of the scale to the point marked by the subject, and the result is used for further analysis. In this study the contrasting descriptors at the ends of the line were relaxed - stressed. A high score indicated a calmer state while a low result indicated a more stressed state.

*The Behavioral Activity Rating Scale (BARS)*. BARS is an observer's rating scale of behavioral activity on a continuum from 1 (difficult or unable to rouse) through 4 (quiet and awake) to a maximal score of 7 (violent, requires restraint). The two ends of the scale represent undesirable behavior. The BARS scale was validated by Swift et al. (40) and was found to have a high inter-rater reliability ( $r=0.99$ ).

*Clinical Global Impression Severity Scale (CGI)*. The CGI is a scale used for general clinical assessment (41) through which the clinician rates the severity of the

disease on a 7-point scale, whereby 1 is normal and 7 is among the most extremely ill patients. The scale has good psychometric properties, was found to have a high inter-rater correlation ( $r=0.93$ ,  $p>0.001$ ) as well as internal consistency (Cronbach Alpha between 0.75 and 0.90).

## PROCEDURE

*Preparation*: The researcher held individual meetings with each patient. The patients were told that the study examines the effect of music on patients during their stay in a seclusion room. The word "relaxing" was omitted from the description of the experiment so as not to bias the results of the study. Each patient was asked to list his favorite discs, songs, singers, song writers or musical works. Of those, the researchers chose musical pieces that met the criteria of "relaxing music," that is, melodic motifs at a legato tempo, and a quiet uniform rhythm at a pace of 60-80 beats per minute. All patients were told at the interview that after the conclusion of the study, they would be allowed to listen to their prepared disc in the seclusion room whether they were part of the study or not. Thirty-nine of the participants (75%) listed their favorite songs, while the rest only listed names of their favorite singers and not specific songs. For those who only mentioned a singer, the researchers picked only songs of that singer which fit the criteria of relaxing music. At the end of the preparation process, a 45-minute disc was compiled for each participant and put in a personal folder bearing his name. The research was approved by the Ethics Committee of Kfar Shaul Psychiatric Hospital and conforms to the provisions of the Declaration of Helsinki. All the participants gave informed consent while they were calm and aware of their surroundings. Patient anonymity was maintained.

*The experiment*: The field study lasted 28 days, during which the use of the seclusion room adhered to the Ministry of Health guidelines: any patient hospitalized in the closed ward who showed signs of psychomotor agitation, noticeable stress or anxiety, or verbal or physical aggression, would be accompanied, upon the discretion of the staff by a medical or nursing staff member to the seclusion room. Each participant was instructed to rate his relaxed/stressed state on the VAS scale twice, once before entering and once after exiting the seclusion room. In addition, the staff member accompanying the participant was instructed to rate the participant's behavioral activity on the BARS scale twice, once before entering and once after exiting the seclusion room. Finally, the CGI scale

was filled out once a week by the permanent nursing staff. Instances in which participants refused to take part in the study upon entering the seclusion room were not included in the data analysis. Participants were allowed to stay in the seclusion room as long as they wanted, while every half hour a staff member checked in on them. Each participant stayed in the seclusion room by himself. The room was locked (to prevent external interferences) but participants could leave the room upon request at any given moment. The stay in the seclusion room was monitored through a microphone and a closed-circuit camera. If a participant requested to stay in the room for more than 45 minutes the disc was played a second time.

## RESULTS

The results section contains two parts. First, group differences in CGI scores were analyzed to detect potential interfering variables. Then, the study hypotheses regarding the effect of the seclusion room on relaxation and behavioral activity were tested.

We performed power analysis using G\*Power 3.1.9.2 (42) for a one tailed t-test with significance level set at 0.05 and total sample size of 52. Following previously reported effect sizes (36), effect size was set to large ( $R^2=0.25$ ). The resulted power was 0.993 (meaning that 99.3% of the time, we ought to get a statistically significant difference between the groups).

In order to examine differences between the research and comparative groups' CGI scores, an independent samples t-test was conducted. The test revealed a significant result ( $t(129.08)=5.91$ ,  $p<.001$ , Cohen's  $d=1$ ): Mean severity score was lower in the research group ( $M=5.49$ ,  $SD=0.84$ ) as compared to the comparative group ( $M=6.23$ ,  $SD=0.63$ ). Therefore, the CGI score was used as a covariant in the analysis of the group differences regarding the effect of the seclusion room.

To examine whether the music played in the seclusion room produced a difference between groups in relaxation and behavioral activity a between-groups MANCOVA was conducted, testing the difference between groups in VAS and BARS scores before and after the stay in the seclusion room. Next, the differences between the first and the second measures in each group were calculated, and another MANCOVA was conducted, testing the differences between groups regarding the degree of change in VAS and BARS scores due to the stay in the seclusion room. In both analyses, the CGI score was used as a covariant. The first MANCOVA revealed a significant

group effect ( $F(4,133)=81.30$ ,  $p<.001$ ,  $\eta^2=.710$ ). The univariate analyses results are presented in Table 1.

As can be seen in Table 1, significant group differences were found in both measures, both before and after the stay in the seclusion room. The research group participants were in a worse mental condition as compared to the comparative group participants before entering the seclusion room (reflected by lower VAS score and higher BARS score). However, their mental condition improved much more in comparison with the comparative group participants after coming out of the room (reflected by higher VAS score and lower BARS score, in accordance with the research hypotheses).

The second MANCOVA, which tested the difference between groups in the degree of change in the measures due to the stay in the seclusion room, revealed a significant group effect ( $F(2,135)=119.20$ ,  $p<.001$ ,  $\eta^2=.638$ ). The univariate analyses results are presented in Table 2.

As can be seen in Table 2, significant group differences were found in both measures, in accordance with the research hypothesis: the degree of change in both measures was higher in the research group as compared to the comparative group. Findings are presented in Figures 1 and 2.

## DISCUSSION

The aim of this study was to examine the effect of exposing patients in a closed psychiatric ward to relaxing music

**Table 1.** Group differences in VAS and BARS scores before and after stay in seclusion room

| Measure | Time            | Res. group M (SE) | Com. group M(SE) | Group difference F(1,136) |
|---------|-----------------|-------------------|------------------|---------------------------|
| VAS     | Before entrance | 2.14 (0.08)       | 2.86 (0.09)      | 31.67***, $\eta^2=.189$   |
|         | After exit      | 7.27 (0.10)       | 5.13 (0.10)      | 218.44***, $\eta^2=.616$  |
| BARS    | Before entrance | 5.53 (0.06)       | 4.64 (0.07)      | 85.48***, $\eta^2=.386$   |
|         | After exit      | 3.97 (0.09)       | 4.30 (0.09)      | 5.65*, $\eta^2=.040$      |

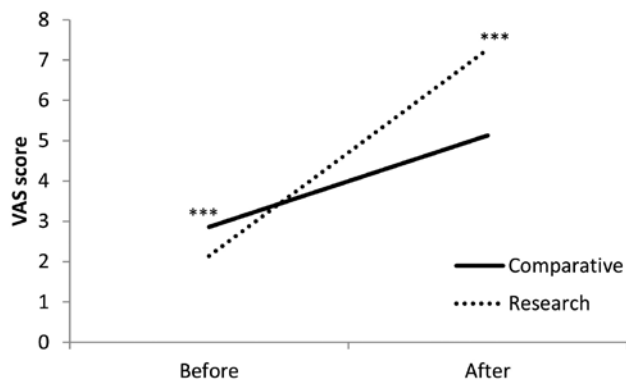
\* $p<.05$ , \*\*\* $p<.001$ . Higher VAS score indicates a calmer state. BARS score of 4 means "calm and quiet" status. Lower score means sleepiness, and higher score means overactive

**Table 2.** Group differences in the degree of change in VAS and BARS scores due to stay in seclusion room

| Measure | Res. group M (SE) | Com. group M(SE) | Group difference F(1,136) |
|---------|-------------------|------------------|---------------------------|
| VAS     | 5.13 (0.12)       | 2.27 (0.13)      | 237.94***, $\eta^2=.636$  |
| BARS    | 1.56 (0.09)       | 0.34 (0.10)      | 73.52***, $\eta^2=.351$   |

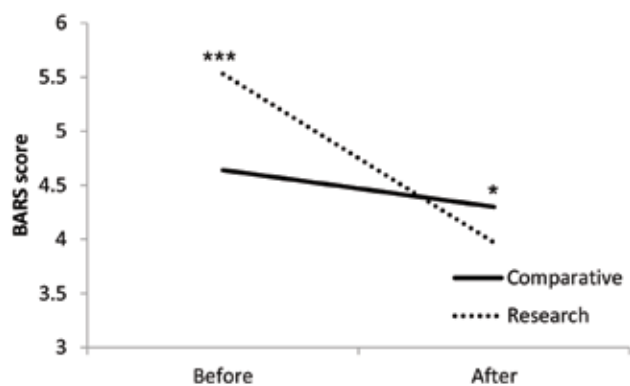
\*\*\* $p<.001$ . Higher VAS score indicates a calmer state. BARS score of 4 means "calm and quiet" status. Lower score means sleepiness, and higher score means overactive

**Figure 1.** VAS score before and after stay in seclusion room in both groups (CGI score controlled)



\*\*\* $p < .001$ . Higher VAS score indicates a calmer state

**Figure 2.** BARS score before and after stay in seclusion room in both groups (CGI score controlled)



\* $p < .05$ , \*\*\* $p < .001$ . BARS score of 4 means "calm and quiet" status. Lower score means sleepiness, and higher score means overactive

of their choice as a patient-centered intervention. The first hypothesis was that patients in the research group, who listened to relaxing music of their choice in the seclusion room, will report a higher degree of relaxation upon leaving the room as compared to the comparative group that spent time in the room but was not exposed to relaxing music or any other sensory stimulation. The findings showed a significant difference in VAS scores between the groups, that is, participants in the research group reported a higher degree of relaxation upon leaving the room as compared to the comparative group. The first hypothesis was therefore confirmed.

The second hypothesis was that the BARS scale, which was filled out by a staff member and measured the behavioral activity of the patients, would indicate a decrease in activity in the research group upon leaving the seclusion

room as compared to the comparative group. Findings showed improvement in the behavioral activity of all participants (expected by the mere stay in a seclusion room, with or without manipulation), but there was a significant improvement in the research group in comparison with the comparative group. The second hypothesis was therefore also confirmed. Indeed, there were differences in the relaxation state between the groups before entering the seclusion room, but the VAS score was actually to the detriment of the research group, who showed greater signs of distress before entering the room (5.53 for the research group and 4.64 for the comparative group). It can be argued that this is a regression to the mean of the research group, but the VAS result of the research group upon leaving the room was significantly lower than that of the comparative group (3.97 for the research group versus 4.30 for the comparative group), so the effect of the experience in the room was significant beyond the effect of regression to the mean.

This study is the first to examine the effect of relaxing music in a closed psychiatric ward. The findings indicate an improvement in patients' mood after staying in a seclusion room and listening to relaxing music of their choice. The findings are based on both participant and staff reports. These findings are consistent with additional studies in which exposure to relaxing music yields positive results among different populations such as elderly people with dementia (10-12), patients with incurable diseases (18, 19), post-traumatic patients (13, 14), hospitalized babies and children (15-17) and patients who suffer from schizophrenia (36) or depression (37). Nevertheless, this study is unique in that it uses a seclusion room, a room that is used as part of the daily routine of a psychiatric ward, while adding a soothing auditory sensory stimulation chosen by the patients themselves. This approach, in which the patient is given control over the selected music, was found effective, as several observational studies have shown an association between preferred music and improved mental health (for an overview see 43). The results can therefore be explained by the psychophysiological theory that mood can be improved by relaxing the body with soft music which decreases circulating endorphin levels (44) that are related to emotions (45, 46).

The study has several limitations. First, although most of the participants were schizophrenic there were differences between the two groups: the behavioral activity in the research group was higher as compared to the activity in the comparative group which included patients with higher severity of the disease. In future research,

it is advisable to choose groups that do not have these differences. Second, the duration of exposure to music was at the request of the patients and not necessarily on a daily basis. Future research should preferably monitor the duration of exposure to music. Third, possible other factors could have led to patients' improvement in their relaxation and lower activity. For example, the research group had the opportunity to meet with someone and talk about what type of music they liked, attention that was not given to the control group. Moreover, the research group was also given some control over their environment by having the option to listen to their music. These limitations should be addressed in future studies. In addition, future research should test whether music has a long-term impact on patients, whether it has an effect on the number of restraining events in the closed ward during and after the exposure to music and should measure relaxation by using biological indicators.

In sum, mental patients in closed wards frequently experience restraint, mainly due to violence towards themselves, the staff, other patients and objects. Although these means against violence continue to be part of the measures that are used in psychiatric wards, they are controversial (47). Studies show that using restraint may cause trauma and harm the staff-patient relationship, whereby patients may perceive the staff as non-sensitive, neglectful or abusive (48, 49). This may elicit negative behavior of the patients thus diminishing the therapeutic value of the closed psychiatric ward (50).

The practice of restraint is routinely used today in psychiatric wards and alternative measures are still at an early-stage of development. The Bizchut organization, which is the Israel Human Rights Center for People with Disabilities, campaigned in April of 2016 to "shatter the restraints" and find ways to treat psychiatric patients without the use of restraints (51). As a result, the Ministry of Health declared that it would discontinue the use of restraints in psychiatric hospitals by the end of 2018 (52). The findings of this study suggest that it is indeed possible to find alternative ways to calm patients before they reach a stage that requires restraint. Playing relaxing music which is chosen by patients is a viable alternative sensory approach that improves mood and behavior. This study should encourage further investigation into the positive impact of relaxing music in psychiatric wards and the use of patient-centered intervention as an alternative means to forced restraint. With patients taking a more involved role in their treatment procedure, psychiatric ward staff may better understand their patients' needs and

concerns and should be able to offer a better treatment experience. Moreover, this patient-centered intervention may facilitate a calmer atmosphere in closed psychiatric wards and contribute to the readiness of the patient to be treated and to the ultimate success of the treatment.

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