

Effectiveness of music therapy on academic performance of nursing students

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Abstract

Background: It has been shown that music has effect on intellectual functions, behavioral aspects, and emotional aspects of students. The present study explores the role of music on these aspects of nursing students. The purpose of this study is to observe the effect of music listening on academic performance.

Materials and Methods: Data were collected using a questionnaire. Sociodemographic data, study habits, home-related aspects, teacher-related aspects, and academic performance rating scale was used to analyze the academic performance of the students. Instrumental flute and violin music called Raag Shivananjani and Raag Mohana were administered to the experimental group using a comfortable head set; it took 10 min for each sample. Music therapy was withheld from the control group. Posttest was conducted on 30th day in both intervention and control group with the same tool to assess the effectiveness of music therapy.

Results: Of the 191 participants, intervention arm in the music therapy group (91 nursing students) and in the control group (100 nursing students), the positive findings obtained were that listening to music during studying had positive effects on the concentration of students and improved the academic performance. In the posttest academic performance rating to assess the effectiveness of music therapy, “estimate the percentage of written Nursing Foundation (care plan and case study) work completed (regardless of accuracy) relative to classmates” and “estimate the accuracy completed written nursing foundation (care plan and case study) work (i.e., percent correct of work done)” there were statistically significant changes in academic performances on exposure to music therapy.

Conclusions: The current study suggests that a sub-group of students can get benefitted when the music is used as an intervention to improve academic performance.

The following core competencies are addressed in this article: Medical knowledge, Practice-based learning and improvement, Interpersonal and communication skills.

Keywords: Academic performance, music therapy, nursing students

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INTRODUCTION

The positive effects of music on the human body was recognized by Greeks more than 2000 years ago and got the place in their curriculum. Yet music therapy has not been not used regularly in modern medicine mainstream treatment protocols even as supplementary note. In modern teaching-learning, music has been used as a method of instruction. Cognitive benefits of active as well as passive music listening often has been regarded as Mozart Effect and need more academic acceptance. It has been recognized that music instructions help to improve few spatial skills in children.^[1,2] However, the actual role of music whether it improves such function still debated and is an area of further research.^[3,4] The present study explores the role of music on these aspects of nursing students. The purpose of this study is to observe the effect of music listening on academic performance.

MATERIALS AND METHODS

The study was conducted in College of Nursing, and the study participants were the 1st year BSc (Nursing) student who was pursuing studies in nursing. Music pieces based on two ragas, “Raga Mohana” which helps to overcome problems of attention deficit and lack of concentration in children and “Raaga Shivananjani” which helps to enhance the intellect and overcome memory problems composed by His Holiness Dr. Sri Sri Sri Ganapathy Sachchidananda Swamiji, Avadhoota Datta Peetham, Mysore, selected for the study.

The null hypothesis (H_0) was that there is no statistical significance between academic performance and music therapy and the alternate hypothesis (H_1) was that there is statistical significance between academic performance and music therapy. The demographic variables such as age, gender, religion, education, occupation, and income were collected. Academic performance rating scale consisted of academic performance rating scale with 19 items to assess effect of music therapy on academic performance among student nurses. Score interpretation was “very Good: >80,” good: 80–59, average: 58–39 and poor: 38–19).

The content validity of the tool was obtained from the principal and experts in the field of the nursing department. Addition and deletion in the

tool were made according to their suggestions and recommendations. The reliability of the tool was assessed using the split-half method and “r” value was obtained by: $R = 2r/1 + r$. The tool was tested for feasibility by conducting the pilot study on population comparable to study participants.

The students were informed by the investigator about the nature and the purpose of the study and their written informed consent was obtained. For the first 4 days, data were collected using questionnaire, sociodemographic data, study habits, home-related aspects, teacher-related aspects and academic performance rating scale was used to analyze the academic performance of the students. Raag Shivananjani and Raag Mohana were administered to the intervention group by using a comfortable headset; it took 10 min for each sample; music therapy was withheld from the control group, but normal activities were carried out as usual for 30 days for both groups. Posttest was conducted on 30th day in participants from both the intervention and control group with the same tool to assess the effectiveness of music therapy. Data collection was done for 4 weeks from March 5, 2018, to April 9, 2018. Time schedule for data collection was from 6.00 AM to 9.00 AM in the morning and 6.00 PM to 9.00 PM in the evening. It took 30 min to collect the sociodemographic data from each sample. Total 191 student nurses were included, and the samples were selected by probability simple random sampling technique by lottery method into control group and intervention group.

Data analysis

Data were tabulated using Microsoft Office Excel 2013 for Windows and Statistical analysis was performed using R Studio (Version 3.5.0) – © 2009–2018 RStudio, Inc. Cross-tabulation and across study variables were checked according to Chi-square test of significance. $P < 5\%$ was considered as statistically significant. Responses were clubbed according to predefined qualitative variables. Data analyzed and interpreted according to the objectives and hypothesis of the study using descriptive and inferential statistical methods.

RESULTS

All the participants were females, belongs to the age group 17–19 years. In both groups none had preexisting hearing problems; one 18-years-old female student was not interested in music.

In study habits, differences across study groups were significant ($P < 0.05$) for five questions. While for the remaining four questions, there was no statistically significant difference was observed ($P > 0.05$) [Table 1].

In the pretest of Likert scale assessment Academic performance rating scale assessment compared to posttest after administration of Raag Shivananjani and Raag Mohana to the intervention group, music therapy was withheld from the control group; however, other normal academic activities were carried out as usual for next 30 days for both groups. In the posttest academic performance rating was conducted to assess the effectiveness of music therapy, in nine out of nineteen questions, a significant difference was observed across study groups ($P < 0.05$). For remaining ten questions, no significant difference was observed between the study groups ($P > 0.05$) [Table 2]. Mean response score in the examination is shown in Figure 1 and Table 3.

DISCUSSION

A raga is a melodic outline for improvisation analogous to a melodic mode practiced since time immemorial in the Indian classical music tradition as the remarkable and central feature which has no conceptual counterpart with the classical European music rituals. Each raga is an array of five melodic

notes which have been assumed to have the ability to mood changes of audiences in relation to time of the day and seasons of the years.^[5] According to Dr. Sri Ganapathy Sachchidananda Swamiji, advantages of music therapy embrace relief from pain and discomfort, reduction of stress, improved coping, self-empowerment, continued developmental growth, heightened satisfaction, reduced job-related stress, and enhancement in the overall sense of well-being, and better social consciousness was observed.^[6]

There are studies which have shown that there is a direct relationship between anxiety and learning those who are engaged in music listening.^[7,8] Researchers have studied the relationship between the type of music and study.^[9] It has been shown that listening to soft-music results in improved concentration and better academic performance in students.^[10,11] In a study which evaluated music as means to support academic performance, it was shown that there was a high correlation between positive self-perception, self-esteem, good relationships, and active music performance and helped improve confidence, self-esteem, and facilitated study motivation.^[12]

The present study attempted to explore the effect of music on academic performance and was assessed in the Academic Performance Rating Scale assessment compared to posttest after administration of Raag Shivananjani and Raag Mohana to the intervention group in relation to pretest performances; however, music therapy was withheld from the control group. Research has shown that scholars who join music education classes have healthier general achievement (scholars who participated in music achieved better grades in English, Mathematics, History, and Science than who did not participate in music classes).^[13,14]

There is ample literature showing direct effect regarding music and its ability to reduce an anxiety

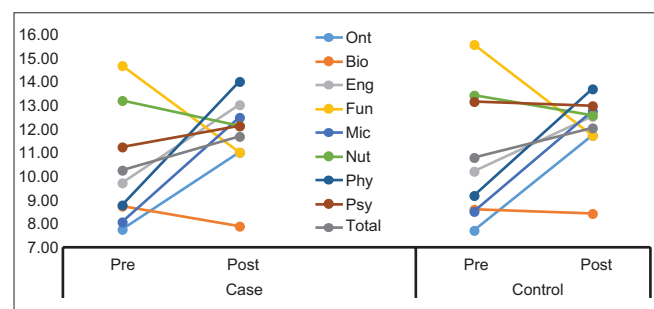


Figure 1: Mean response score in the examination

Table 1: Study habits distribution of the study participants

Narration	Case response		Control response		χ^2	P
	No	Yes	No	Yes		
1. I study only when there is a quiz	73	18	93	7	6.841	0.0089
2. I feel tired, bored and sleepy	68	23	73	27	0.073	0.7865
3. I prefer listening to radio, watching TV, etc.	39	52	43	57	0.000	0.9841
4. I am lazy to study	85	6	85	15	3.441	0.0636
5. I am disturbed when studying	68	23	58	42	5.937	0.0148
6. I have no time to study at home	82	9	76	24	6.637	0.0100
7. I study only when I like	24	67	40	60	3.971	0.0463
8. I don't have a comfortable place to study	73	18	66	33	4.464	0.0346
9. I copy the assignments of friends	81	6	81	7	1.418	0.2337

Table 2: Academic performances in relation to anxiety among study participants

Narration	Study group	50-69%	70-79%	80-89%	90-100%	χ^2	P
1. Estimate the percentage of written Nursing Foundation (care plan and case study) work completed (regardless of accuracy) relative to classmates	Case Control	6 4	29 60	56 35	0 1	15.155	0.001
2. Estimate the percentage of written English work completed (regardless of accuracy) relative to classmates	Case Control	3 8	33 54	55 35	0 1	11.065	0.004
3. Estimate the accuracy completed written Nursing Foundation (care plan and case study) work (i.e., percent correct of work done)	Case Control	2 16	56 59	33 25	0 0	11.672	0.003
4. Estimate the accuracy of completed English work (i.e., percent correct of work done)	Case Control	7 13	51 49	32 33	0 3	1.738	0.419
Narration	Study group	Never/rarely	Sometimes	Often	Very often	χ^2	P
6. How frequently does the student accurately follow teacher instructions and/or clad discussion during large-group (e.g., whole class) instruction?	Case Control	7 19	54 49	30 31	0 1	6.388	0.094
7. How frequently does the student accurately follow teacher instructions and/or clad discussion during small-group (e.g., reading group) instruction?	Case Control	6 13	57 56	28 24	0 7	9.492	0.023
8. How quickly does this student learn new material (i.e., pick up novel concepts)?	Case Control	6 23	48 46	37 30	0 1	11.341	0.010
9. What is the quality or neatness of this student's handwriting?	Case Control	5 10	59 59	27 29	0 2	3.321	0.345
10. What is the quality of this student's reading skills?	Case Control	26 11	32 60	31 26	2 3	14.850	0.002
11. What is the quality of this student's speaking skills?	Case Control	26 17	32 51	31 28	1 4	7.726	0.052
12. How often does the student's complete written work in a careless, hasty fashion?	Case Control	36 30	45 54	10 15	0 1	3.787	0.436
13. How frequently does the student take more time to complete work than his/her classmates?	Case Control	32 35	50 52	9 11	0 2	5.390	0.250
14. How often is the student able to pay attention without you prompting him/her?	Case Control	27 35	52 51	12 11	0 2	2.808	0.590
15. How frequently does this student require your assistance to accurately complete his/her academic work?	Case Control	48 38	33 47	10 11	0 3	7.984	0.092
16. How often does the student begin written work before understanding the directions?	Case Control	26 35	56 55	8 8	0 2	4.188	0.381
17. How frequently does this student have difficulty recalling material from a previous day's lessons?	Case Control	46 40	34 50	11 7	0 3	9.642	0.047
18. How often does the student appear to be staring excessively or "spaced out"?	Case Control	42 44	36 45	11 6	0 1	5.768	0.217
19. How often does the student appear withdrawn or tend to lack an emotional response in a social situation?	Case Control	38 26	49 58	4 11	0 1	8.067	0.089

Table 3: Pre-post mean exam score

Subjects	Case		Control		Percentage change	
	Pre	Post	Pre	Post	Case	Control
Ont	7.76	11.01	7.73	11.74	41.9	51.9
Bio	8.77	7.90	8.60	8.44	-9.9	-1.9
Eng	9.73	13.04	10.21	12.54	34.1	22.8
Fun	14.68	11.01	15.59	11.74	-25.0	-24.7
Mic	8.10	12.49	8.53	12.77	54.3	49.7
Nut	13.24	12.14	13.43	12.59	-8.3	-6.3
Phy	8.81	14.03	9.18	13.71	59.2	49.3
Psy	11.24	12.14	13.16	12.99	8.0	-1.3
Total	10.29	11.72	10.80	12.07	13.9	11.7

state. Unqualified academic achievement of students after involvement in music learning is undercloud of clarity though research groups claimed that active music participation helps improvement of cognitive abilities in math tasks and verbal skills.^[15-18] The positive effect of participation in music on general achievement was proved in the experimental study of Barr *et al.*^[19] The

newer researches had revealed a relationship between elementary school pupils' academic performance and the participation in music programs.^[20] Musical frequencies cause mutual responses that can calm us by occupying channels in our brain by disrupting us and tuning stimuli from outside.^[21-23] In addition, it has been shown that participation in musical activities facilitates the development of friendships, contributes to a better social climate in classroom, pupils' confidence and sense of belonging. These have impacts on intellectual, social, and personal development of children and young people.^[5,4,24-27]

Some research groups, however, have observed contradictory findings of no relation of music with learning performances.^[28,29]

It may be due to the fact that participating in music activities is related to other factors which have also

a strong impact on academic achievements, such as parents and home environment.^[30,31]

Yet, there is observation that regular music activity helps in heightening the self-esteem and augmented motivation.^[32,33]

Strengths of the study

The current study helped us to internalize that Indian classical music in the form of abstract music instruction methods through the 'raga' improves certain aptitude in nursing students that included "Academic performances in relation to anxiety." Based on our literature search, none of the published studies have investigated regarding the role of music in formulating healthcare curriculum in published literature from Indian sub-continent particularly using Indian classical raga on academic institutions.

Limitations of the study

This novel study had several limitations. First, this was a single-center study with the limited sample in resource-poor setting on female nursing students. Hence, the external validity of data remains questionable; Second, there was lack of information on student's family and the local guardian support available for students in and around institute. This might have important implication as students belonging to same or nearby place may experience better emotional and psychosocial support as compared to students hailing from distant areas that may have been factors to be actual or potential bias in our study.

Future directions of the study

A national level prospective longitudinal multipronged multicentric study is required to throw light on role of Indian classical music on academic growth of our future generations from grassroots to higher education to combat ever-growing load of courses and curriculum. However, the basic problem in the research in Indian infrastructure is a lack of logistics for which we need to improve to give birth to valid data.

CONCLUSIONS

Music is a relatively a less intrusive and less expensive tool to improve academic performance with its own merits and limitations.^[4] There are few studies which evaluated the effect of music therapy on academic performance. The current study suggests that a subgroup of students can get benefitted when the music is used as an intervention to improve academic performance.

Financial support and sponsorship
Nil.

Conflicts of interest

There are no conflicts of interest.

Ethical conduct of research

Ethical conduct of research: Ethical clearance was obtained from Institutional Ethics Committee, Narayana College of Nursing and informed consent was obtained from all participants in the study.

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