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Effectiveness of Dance Therapy on Cognitive, Behavioral and Emotional Development among Nursing Students in Selected Nursing College of Kamrup (Metro), Assam: A Cohort Study

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Abstract: ***Nursing, being a very noble profession in the health care system, plays a significant role in the development of health care industry and providing proper holistic care to the sick and support the community in a best way. Every individual nurse practice skills and demonstrate some vital procedure which is the basic learning of the nursing students. And at present, the education should be holistic, integrated, enjoyable and engaging. Dance therapy which is the psychotherapeutic use of movements for the purpose of improving health and well being may be one of the strategies for the cognitive, behavioral and emotional development for nursing students so that they will be able to provide quality nursing care. Aim: The aim of the study was to assess the effectiveness of dance therapy on cognitive, behavioral and emotional development among nursing students of selected nursing colleges of Kamrup Metro, Assam. Method: Cohort study was used, and one group pretest and post test was adopted in the study. The 20s of Nursing college of Kamrup, Metro, Assam and who fulfilled the inclusion criteria. Inventory checklist was used to assess effectiveness of the dance therapy among nursing students'. Result: Majority 13 (65 %) of the students were 18 years old, 16 (80%) had nuclear family, 12(60%) of the respondents father's occupation was service and 11 (55%) of the respondents mothers were housewife with a monthly family income between Rs. 30, 000- Rs. 60, 000 of 10(50%). majority 14 (70%) of the students had ≤ 2 siblings 14 (85%) of the respondents did not stay in hostel. For the cognitive aspects the pre-therapy mean was 25.30 with standard deviation of 2.31 and the highest mean after therapy was found in the 3rd post therapy evaluation with the mean score of 27.50 with standard deviation of 3.50 which was found to be non-significant (p=0.144; F=1.950) using repeated measure ANOVA. For the behavioral aspects the pre-therapy mean was 21.30 with standard deviation of 3.38 and the highest mean after therapy was found in the 1st post therapy evaluation with the mean score of 28.4 with standard deviation of 4.10 which was found to be significant (p = 0.001; F= 13.499) using repeated measure ANOVA. For the emotional aspects the pre-therapy mean was 27.60 with standard deviation of 4.05 and the highest mean after therapy was found in the3rd post therapy evaluation with the mean score of 30.90 with standard deviation of 3.76 which was found to be significant (p = 0.055; F=3.005) using repeated measure ANOVA. The paired t- test comparison of cognitive aspects with pre therapy evaluation score with 1st post therapy score was found to be significant for 1st and 3rd post therapy evaluation (p=0.019; t= 2.557) and (p=0.039; t= 2.214) respectively. The paired t- test comparison of behavioral aspects with pre therapy evaluation score and 1st post therapy score was found to be significant (p= 0.0001 ;t= 6.305); 2nd and 3rd post therapy evaluation was found to be significant (p=0.036; t=2.256) and pre therapy evaluation with 3rd post therapy evaluation was significant (p=0.031 ; t= 2.330). The paired t- test comparison of emotional aspects with 2nd and 3rd post therapy evaluation score was significant (p=0.017; t=2.610) ; pre therapy evaluation and 3rd post therapy evaluation was found to be significant (p=0.002: t=3.606). The association of the 3rd post therapy evaluation score of cognitive aspects with the selected demographic variables was found to be significant with type of family (p= 0.043, df=1). The association of the post therapy evaluation score of behavioral aspects with the selected demographic variables was found to be significant with hostel stay (p= 0.035, df =1). However the association of the post therapy evaluation score of emotional aspects with the selected demographic variables was found to be non significant. Conclusion: Since the findings shows an improvement in the cognitive, emotional and behavioral development after the dance therapy, so it can be one of the strategies which can be implemented in the education curriculum to improve the overall development of the students.***

Keywords: dance therapy, cognitive, behavioral, emotional, development, nursing students

1. Introduction

Nursing is a very noble profession in the health care system and plays a significant role in the development of health care industry and providing proper holistic care to the sick and support the community in a best way. Every individual nurse practice skills and demonstrate some vital procedure which is the basic learning of the nursing students. And one of the goals of baccalaureate nursing education is to facilitate students' cognitive development, that is, their ability to employ reason, manage diversity, and engage in contextual decision-making. Emotion regulation is a key source of stress for early career and student nurses. Clinical placement experiences can elicit strong emotions in nursing students; however, they may be unprepared for the challenge of regulating their emotions in real-world practice. Their educational and health status, their readiness to take on adult roles and responsibilities and the support they receive from their families, communities and government will determine

their own future and the future of their countries. The education of the nursing student who are in the adolescent shall be directed to the development of the adolescent's personality, talent and mental and physical abilities to their fullest potential, the preparation of the adolescent for responsible life in society; in the spirit of understanding, peace, tolerance, equality of the sexes, and friendship among all people. **WHO (1997)**[(1)] . And also the National Education Policy 2020 focuses on Curriculum and Pedagogy in Schools: Learning Should be Holistic, Integrated, Enjoyable, and Engaging [(2)].

So Dance / movement therapy (DMT) is defined by the American Dance Therapy Association (ADTA) as the psychotherapeutic use of movements to promote emotional, social, cognitive and physical integrations of the individual, for the purpose of emotional, cognitive and physical integration of the individuals, for the purpose of improving health and well being.[(3)]

The four stages of dance therapy are:

- **Preparation**: This is the introduction stage. The time where the adolescents get to know your dance therapist.
- **Incubation:** During this stage, the adolescent begin to relax and release their negative energy. The adolescent let go of their consciousness and allow the body to take over. Their movements become symbolic of their hopes, fears, anxieties, frustrations, etc.
- **Illumination:** During this stage the adolescents become more aware of themselves. The adolescent begins to comfortable express themselves through their movements. The adolescent gains a sense of clarity, freedom etc
- **Evaluation:** During this last stage, the adolescent discusses what they have learned from the therapy and how they plan to incorporate what they have learned into your daily life. It is during this last part of therapy that the adolescent learn how to use dance therapy to improve the quality of their life. The adolescent learn how to communicate more effective, improve their emotional, spiritual and physical health, increase their self-esteem, self-image and self-awareness, make better decisions and strengthen their relationships.

Advantages of dance/ movement therapy are as follows:

- It gives people the ability to express emotions
- It relieves stress
- It increases physical fitness and gross motor skill development
- It improves confidence and self esteem

Dance therapy which is the psychotherapeutic use of movements for the purpose of improving health and well being may be one of the strategies for the cognitive, behavioral and emotional development for nursing students so that they will be able to provide quality nursing care.

2. Need of the Study

Dr. Stewart Trost of Oregon State University (2007) report of physical activity like exercise and dance therapy to improve concentration, memory and learning abilities among adolescent school student. Complementary actions are needed to promote healthy development in adolescents to prevent physical and mental health problems. (India Development Gateway).

According to the compilation from the 2016 Crime in India Report published by National Crime Records Bureau (NCRB), Government of India, it was reported that Assam stands in the 5th rank on base of the crime rate in India

According to the national health profile 2018 (13thissue**)** No of suicidal death among females in Assam (14 and above-below 18 years) is 159/867 (18.33%) and among males is 193 /3624 (5.3%)[(4)].

A study conducted in Mangalore to determine the perceived level of stress and coping behavior among B. Sc. nursing students in selected colleges found that 55% of the sample experienced severe stress, 12.5% experienced moderate level of stress, and 32.5% experienced mild level of stress. The study concluded that stress may arouse from their work, contact with patients, and demands of the organization. Nursing students are valuable human resources and stress can lead to low productivity, low quality of life, and suicidal ideas[(5)].

3. Objectives

1) To explore the effectiveness of dance therapy on cognitive, behavioral and emotional development among nursing students in selected nursing college of Guwahati, Assam
2) To find out the association on cognitive, behavioral and emotional development among nursing students in Kamrup Metro, Assam with demographic variables , such as age, occupation of the father, occupation of the mother, previous exposure to dance and music class.

4. Methods and Materials

The research approach adopted for the study was quantitative approach. Cohort design was adopted for this study. Random sampling technique was used to select the samples. The samples were 20 nursing students who were willing to participate in the study were included in the study. Students who have physically problems in dancing were excluded from the study. The study was conducted in selected nursing college of Guwahati, Assam.

Self report inventory checklist was used to assess the effectiveness of dance therapy on cognitive, behavioral and emotional development among the nursing students in selected nursing college of Guwahati, Assam. The checklist was rated as never, occasional, sometimes and always. The positive statements were scored as 4, 3, 2 and 1 respectively and negative statement as 1, 2, 3 and 4. The maximum score was 116. The total score for cognitive, behavioral and emotional aspects was 40, 36 and 40 respectively. The grading was done based on mean and standard deviation.

5. Data Collection Procedure

To conduct the study, the investigator took permission from the principal of the selected college. 20 first year BSc Nursing students who were willing to give consent to participate in the study were selected randomly. Students who have physically problems in dancing were excluded from the study. The students were briefed about the questionnaire. The questionnaires were distributed to the randomly selected students. After completion of the questionnaire, the dance movement therapy was intervened for two hours twice a week for 3 months.

Post – therapy evaluation was done at the end of 1 month, 4 months and 6 months to assess the effectiveness of the dance therapy in terms of their improvement of cognitive development, emotional and motivational development among the adolescence using the self report inventory checklist.

6. Results

Section 1: Analysis of Demographic Characteristics of the respondents

Table I: Frequency and Percentage Distribution of respondents according to the Demographic Characteristics of the respondents, n= 20

Demographic Performa	Frequency (f)	Percentage (%)
A. Age in years		
1. 17	2	10
2. 18	13	65
3. 19	2	10
4. 20	2	10
5. 21	1	5
B. Family type		
1. Nuclear	16	80
2. Joint	4	20
C. Father's occupation		
1. Service	12	60
2. Business	7	35
3. Retired	1	5
D. Mother's occupation		
1. Housewife	11	55
2. Service	9	45
E. Family income per month (in rupees)		
1. < 30000	3	15
2. 30000-60000	10	50
3.> 60000	7	35
F. Number of siblings		
1. >2	6	30
2.≤ 2	14	70
G. Hostel stay		
1. Yes	3	15
2. No	17	85

Section 2: Effectiveness of dance therapy on cognitive, behavioral and emotional development among nursing students

Table II: Comparison of pre therapy evaluation, post therapy evaluation 1, post therapy evaluation 2 and post therapy evaluation 3 scores of cognitive aspect among samples (Repeated Measures ANOVA), n= 20

Cognitive Aspect	Mean	S.D	Repeated Measures ANOVA – F Value
Pre therapy evaluation	25.30	2.31	F = 1.950 P = 0.144 N.S
Post Therapy evaluation 1	27.20	3.07	
Post Therapy evaluation 2	26.95	4.09	
Post Therapy evaluation 3	27.50	3.50	

N.S – Not Significant

Table II depicts that in cognitive aspects, the pre-therapy mean was 25.30 with standard deviation of 2.31 and the highest mean after therapy was found in the 3rd post therapy evaluation with the mean score of 27.50 with standard deviation of 3.50 which was found to be non-significant (p=0.144; F=1.950) using repeated measure ANOVA

Table III: Comparison of pre therapy evaluation, post therapy evaluation 1, post therapy evaluation 2 and post therapy evaluation 3 scores of behavioral aspect among samples (Repeated Measures ANOVA), n = 20

Behavioral Aspect	Mean	S.D	Repeated Measures ANOVA – F Value
Pre therapy evaluation	21.30	3.38	F = 13.499 P = 0.0001 S***
Post Therapy evaluation 1	28.40	4.10	
Post Therapy evaluation 2	28.20	6.09	
Post Therapy evaluation 3	24.35	3.92	

***p<0.001, S – Significant

Table III depicts that in behavioral aspects, the pre-therapy mean was 21.30 with standard deviation of 3.38 and the highest mean after therapy was found in the 1st post therapy evaluation with the mean score of 28.4 with standard deviation of 4.10 which was found to be significant (p = 0.001; F= 13.499) using repeated measure ANOVA.

Table IV: Comparison of pre therapy evaluation, post therapy evaluation 1, post therapy evaluation 2 and post therapy evaluation 3 scores of emotional aspect among samples (Repeated Measures ANOVA), n = 20

Emotional Aspect	Mean	S.D	Repeated Measures ANOVA – F Value
Pre therapy evaluation	27.60	4.05	F = 3.005 P = 0.055 S*
Post Therapy evaluation 1	28.00	4.26	
Post Therapy evaluation 2	27.85	6.16	
Post Therapy evaluation 3	30.90	3.76	

*p<0.05, S – Significant

Table IV depicts that in emotional aspects, the pre-therapy mean was 27.60 with standard deviation of 4.05 and the highest mean after therapy was found in the3rd post therapy evaluation with the mean score of 30.90 with standard deviation of 3.76 which was found to be significant (p = 0.055; F=3.005) using repeated measure ANOVA

Table V: Pair wise comparison of pre therapy evaluation, post therapy evaluation 1, post therapy evaluation 2 and post therapy evaluation 3 scores of cognitive aspect among samples, n = 20

Cognitive Aspect	Mean	S.D	Paired 't' test Value
Pre therapy evaluation	25.30	2.31	**t = 2.557**
Post Therapy evaluation 1	27.20	3.07	**p=0.019, S***
Post Therapy evaluation 1	27.20	3.07	t = 0.285

Post Therapy evaluation 2	26.95	4.09	p=0.778, N.S
Post Therapy evaluation 2	26.95	4.09	t = 0.447
Post Therapy evaluation 3	27.50	3.50	p=0.660, N.S
Pretherapy evaluation	25.30	2.31	**t = 2.214**
Post Therapy evaluation 3	27.50	3.50	**p=0.039, S***

*p<0.05, S – Significant, N/S – Not Significant

Table V depicts that, the paired t- test comparison of cognitive aspects with pre therapy evaluation score with 1st post therapy score was found to be significant for 1st and 3rd post therapy evaluation (p=0.019; t= 2.557) and (p=0.039; t= 2.214) respectively.

Table VI: Pair wise comparison of pre therapy evaluation, post therapy evaluation 1, post therapy evaluation 2 and post therapy evaluation 3 scores of behavioral aspect among samples, n = 20

Behavioral Aspect	Mean	S.D	Paired 't' test Value
Pre therapy evaluation	21.30	3.38	t = 6.305
Post Therapy evaluation 1	28.40	4.10	p=0.0001, S***
Post Therapy evaluation 1	28.40	4.10	t = 0.159
Post Therapy evaluation 2	28.20	6.09	p=0.876, N.S
Post Therapy evaluation 2	28.20	6.09	t = 2.256
Post Therapy evaluation 3	24.35	3.92	p=0.036, S*
Pretherapy evaluation	21.30	3.38	t = 2.330
Post Therapy evaluation 3	24.35	3.92	p=0.031, S*

***p<0.001, *p<0.05, S – Significant, N/S – Not Significant

Table VI depicts that, the paired t- test comparison of behavioral aspects with pre therapy evaluation score and 1st post therapy score was found to be significant (p= 0.0001 ;t= 6.305); 2nd and 3rd post therapy evaluation was found to be significant (p=0.036; t=2.256) and pre therapy evaluation with 3rd post therapy evaluation was significant (p=0.031 ; t= 2.330).

Table VII: Pair wise comparison of pre therapy evaluation, post therapy evaluation 1, post therapy evaluation 2 and post therapy evaluation 3 scores of emotional aspect among samples, n= 20

Emotional Aspect	Mean	S.D	Paired 't' Therapy evaluation Value
Pre therapy evaluation	27.60	4.05	t = 0.332
Post Therapy evaluation 1	28.00	4.26	p=0.743, N.S
Post Therapy evaluation 1	28.00	4.26	t = 0.089
Post Therapy evaluation 2	27.85	6.16	p=0.930, N.S
Post Therapy evaluation 2	27.85	6.16	t = 2.610
Post Therapy evaluation 3	30.90	3.76	p=0.017, S*
Pre therapy evaluation	27.60	4.05	t = 3.606
Post Test 3	30.90	3.76	p=0.002, S**

*p<0.05, **p<0.01, S – Significant, N/S – Not Significant

Table VII depicts that, the paired t- test comparison of emotional aspects with 2nd and 3rd post therapy evaluation score was significant (p=0.017; t=2.610); pre therapy evaluation and 3rd post therapy evaluation was found to be significant (p=0.002: t=3.606).

Table VIII: Association of post therapy evaluation 3 score of cognitive aspect among the samples with selected demographic variables, n = 20

Demographic Variables	χ^2	df	p- value	Remarks
Age in years	4.926	4	0.295	NS
Family type	4.09	1	0.043	S*
Father's occupation	1.289	2	0.525	NS
Mother's occupation	0.737	1	0.391	NS
Monthly Income	1.837	2	0.399	NS
Number of siblings	0.087	1	0.769	NS
Hostel Stay	0.194	1	0.660	NS

S – Significant, N/S – Not Significant

Table VIII depicts that, the association of the 3rd post therapy evaluation score of cognitive aspects with the selected demographic variables was found to be significant with type of family (p= 0.043, df=1).

Table IX: Association of post therapy evaluation 3 score of behavioral aspect among the samples with selected demographic variables

Demographic Variables	χ^2	df	p- value	Remarks
Age in years	2.372	4	0.668	NS
Family type	0.208	1	0.648	NS
Father's occupation	1.746	2	0.418	NS
Mother's occupation	2.155	1	O.142	NS
Monthly Income	4.048	2	0.132	NS
Number of siblings	0.159	1	0.690	NS
Hostel Stay	5.294	1	0.021	S*

S – Significant, N/S – Not Significant

Table IX depicts that, the association of the post therapy 3rd evaluation score of behavioral aspects with the selected demographic variables was found to be significant with hostel stay (p= 0.035, df =1).

Table X: Association of post Therapy evaluation 3 score of emotional aspect among the samples with selected demographic variables

Demographic Variables	χ^2	df	p- value	Remarks
Age in years	4.926	4	0.295	NS
Family type	0.808	1	0.369	NS
Father's occupation	2.299	2	0.317	NS
Mother's occupation	0.737	1	0.391	NS
Monthly Income	4.531	2	0.104	NS
Number of siblings	1.626	1	0.202	NS
Hostel Stay	0.194	1	0.660	NS

S – Significant, N/S – Not Significant

Table X depicts that, the association of the post therapy evaluation score of emotional aspects with the selected demographic variables was found to be non significant.

7. Discussion

In the present study, the dance therapy was found effective in the cognitive, emotional and behavioral aspects of the nursing student. Some of the participants have verbally expressed that they were able to gain more confidence and also in the well being and social skills also. Koch et al. (2013) also stated that based on their research, that DMT proved as an efficient and feasible approach for autism spectrum disorder, because after the seven-week treatment, the participants of the dance program improved their body image, self-other distinction, wellbeing and social skills[6].

The cognitive, emotional and behavioral aspects have a direct impact on the adolescence health. The study is supported by Duberg A, et.al., investigate whether dance intervention influenced self-rated health for adolescent girls with internalizing problems, resulted of 91% of the girls rated the dance intervention as a positive experience[7].

The findings of the study was also in inconsistent with the similar studies done by Ami Chiu in Carlifornia where it was proven that the dance therapy program caused a positive change and help the development of social and affective skills[8].

Researcher noted that there were many changes in the students behavior through the sessions not only within themselves but in their interactions with their peers as well (Panagiotopoulou, 2018)[9].

In the present study, the paired t- test comparison of cognitive aspects with pre therapy evaluation score with 1st post therapy score was found to be significant for 1st and 3rd post therapy evaluation (p=0.019; t= 2.557) and (p=0.039; t= 2.214) respectively. The study is also in accord to the study by V. Demonte et. al that the students were also able to create links between theoretical concepts and nursing practice after the dance therapy[10].

The study also shows that in emotional aspects, the pre-therapy mean was 27.60 with standard deviation of 4.05 and the highest mean after therapy was found in the3rd post therapy evaluation with the mean score of 30.90 with standard deviation of 3.76 which was found to be significant (p = 0.055; F=3.005) using repeated measure ANOVA and, the paired t- test comparison of emotional aspects with 2nd and 3rd post therapy evaluation score was significant (p=0.017; t=2.610) ; pre therapy evaluation and 3rd post therapy evaluation was found to be significant (p=0.002: t=3.606). This findings is also supported by similar studies where the findings showed the DMT group among the older adult with dementia had significant decreases in depression, loneliness, and negative mood (d = 0.33-0.42, p <.05) and improved daily functioning (d = 0.40, p <.01) and diurnal cortisol slope (d = 0.30, p <.01)[11]. Researcher also found out that there was a significant change in all mood states and a significant odds of a change in total mood score, per unit increase in pre-total mood score, after one DMT session (odds ratio = 1.84; p ≤.01). There was no significant association between patient characteristics and changes in individual or total mood scores, indicating that DMT may be useful for a wide range of patients. The results from this formative study will help researchers develop prospective studies focusing on therapeutic effects of DMT for a wide range of patients.(Ashley N, Healther K, Peter D.W, Erin A, Marianne Z W :2014)[12]

In the present study the paired t- test comparison of behavioral aspects with pre therapy evaluation score and 1st post therapy score was found to be significant (p= 0.0001 ;t= 6.305); 2nd and 3rd post therapy evaluation was found to be significant (p=0.036; t=2.256) and pre therapy evaluation with 3rd post therapy evaluation was significant (p=0.031 ; t= 2.330). And also the pre-therapy mean was 21.30 with standard deviation of 3.38 and the highest mean after therapy was found in the 1st post therapy evaluation with the mean score of 28.4 with standard deviation of 4.10 which was found to be significant (p = 0.001; F= 13.499) using repeated measure ANOVA. This finding is also in accord to the similar studies where the researchers had reported that the dance classes and movement therapy have also shown some promise for treating students with behavior problems (Woolery, Myers, Stermlieb and Zeltzer, 2004)[13]. And also dance and movement classes in academic settings may also serve as a therapeutic tool to help young people with social interventions and personal development (Goodgame, 2007; Ross, 2000)[14].

Other researcher also stated that their study results support the positive effect of dance treatment on psychological functioning and perceived competence to exercise in obese adolescents. Dance has proven to be a popular form of physical activity, especially in adolescent females. It can provide a supportive environment and improve negative body image and self-perception. It can also reduce disabling conditions caused by stress. (Wagener et al, 2012)[15]

8. Conclusion

The findings of this study shows there is an improvement in the cognitive, behavioral and emotional aspect of the nursing students after the dance therapy and also numerous researcher also found that dance therapy had a similar positive effect on the participant. So based on the findings in the present study and other supporting literature review, Dance Therapy can be an used as a strategies for nursing students to improve the cognitive, behavioral and emotional aspects of the students. It can be inculcated in the nursing curriculum.

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