ORIGINAL ARTICLE

Effects of Animal-Assisted Activities on Stress Reduction in Nursery School Teachers

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ABSTRACT

Objective: **Stress among nursery school teachers is a serious problem worldwide. Animal-assisted activities (AAA) have been implemented in several groups and have elicited significantly positive responses from participants. However, no studies have yet reported the relevance of this activity in nursery school teachers.**

The purpose of this study was to examine the psychological responses associated with the implementation of AAA in nursery schools.

Design: **Quantitative, quasi-experimental study**

Materials and Methods: **A questionnaire on mood was administered to nursery school teachers before and after the implementation of AAA using dogs, and the means of each item were compared.**

Results: **The results of the questionnaire showed significant differences in two items of "nervousness/excitement" and "fatigue," one item of "anxious mood," and all items of "depressed mood.**

Discussions: **The present study showed that nursery school teachers obtained relaxation effects through AAA. The presence of animals in nursery schools may have a relaxing effect on nursery school teachers and reduce their stress levels.**

Conclusions: **AAA had a relaxation effect on nursery school teachers and reduced their stress levels. In conclusion, we found that environments with animals in nursery schools are meaningful for nursery school teachers and children.**

KEY WORDS

animal-assisted activity, nursery school teachers, mood, questionnaire stress, relaxation

INTRODUCTION

Globally, stress in nursery school teachers is a serious problem. Among others, the factors resulting in their stress include remuneration (salaries/wages), working environment-related issues, such as the length of break time, and other common problems[1-3)]. Stress in nursery school teachers is associated with the intention to quit, psychological symptoms, and disease onset; thus, it is a serious problem[4-8)].

Various forms of childcare services are currently provided to meet the needs of parents and support their work-life balance. These include short-term childcare, overtime childcare, night childcare, holiday childcare, sick and post-sick childcare, and childcare for children with disabilities. In addition to basic functions, such as childcare and child-raising, nursery school teachers are required to meet several types of needs of parents and local communities. Over time, the child-rearing support from family and local communities has decreased. Against this background, nursery school teachers are required to function as counsellors and social workers. In other words, they need to handle parenting-related stress, anxiety about parenting, and home environmental problems of parents, along with tasks related to basic childcare. Such a recent and rapid change in the environment of nursery school teachers and the roles of parents has profoundly affected the physical and mental health of the teachers more than ever rather than decreasing the burden of their workload[5)].

The Asian Society for Animal-assisted Education and Therapy defined animal-assisted education (AAE) as an intervention that enhances the educational quality and children's willingness to study using animals as 'living educational tools'. For instance, in Japan, animal-rearing is used as 'educational (study) support' in schools and facilities[9-11)]. The National Curriculum Standard for Kindergartens describes the effects of animals and plants living in the surrounding area in the 'Ideal Image by the End of Childhood' section[12,13)]. Specifically, interactions with nature foster the values of respecting living things and caring about nature. This guideline states that the foundation for rich emotions is cultivated through direct experiences in early childhood[14)]. In light of these facts, animal-assisted activity (AAA) has been implemented as a unique programme in pre-schools and kindergartens.

The Japanese Animal Hospital Association has defined AAA as an interactive activity that mainly aims to provide an opportunity for recreational benefits by enhancing emotional stability and the quality of life[15)]. AAA has been implemented in several institutions, and its effects have been reported in many studies[16-19)]. The subjects involved in these studies vary from patients to healthy individuals; however, few studies have examined the effects of AAA on individuals according to their occupations. Furthermore, no study has evaluated the effects of AAA on nursery school teachers.

Mood, which is an ever-changing psychological response in the relation to situations, represents psychological characteristics as an individual feature[20)]. There are some tools to measure individual features and mood states. For instance, a mood questionnaire is one of the few tools that multimodally evaluate a subjective state of mood. The mood questionnaire has been used in several studies, such as a study of mood

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Table 1: Mood questionnaire: 8 items for each of 5 factors (total: 40 items)

【 I. Tensionand excitement 】
1. I am excited.
2. I can't stay still because you feel high.
3. I am nervous.
4. I am fidgeting.
5. I am mad.
6. I am panicked.
7. I am in agony.
8. I am irritated.
【 II. Refreshing mood 】
9. I feel calm.
10. I feel refreshed.
11. I feel relaxed.
12. I can do things comfortably.
13. I am lively.
14. I am full of energy.
15. I feel energized.
16. I am fulfilling.
【 III. Fatigue 】
17. I can't want to do anything.
18. I am bothersome.
19. I am reluctant to do it.
20. I am turned-off mood.
21. I am feeling tired for no reason.
22. I can't concentrate on things.
23. I am tire out.
24. I can't want to talk to anyone.
【 IV. Depressive mood 】
25. I become depressed.
26. I feel blue and depressed.
27. I feel miserable.
28. I am disappointed.
29. I feel down.
30. I am having a tough time.
31. I feel empty.
32. I feel lonely.
【 V. Anxious mood 】
33. I think a lot about the future.
34. I feel uneasy somehow.
35. Various thoughts go through my heart.
36. I care about myself.
37. I am confused.
38. I can't decide what you think.
39. I am worried that something inconvenient will happen.
40. I feel something is missing.

4-grade rating scale scores; "1:Not applicable at all" "2:Not applicable" "3:Applicable" "4:Very applicable"

changes associated with relaxation and a survey of anxiety and stress in university students[21,22].

In this study, the mood questionnaire was administered to teachers who worked at a nursery school where AAA was implemented, and their psychological changes before and after AAA were evaluated. Given that no study has examined the effects of AAA on nursery school teachers and their overstressed conditions being a global problem, the significance and importance of this study are enormous.

PURPOSE

AAA has been implemented in several populations, and positive responses were obtained from many of them. However, to date, no study has assessed its effects on nursery school teachers. They participated in AAA that employed AAE. The effects of AAA on their mood were evaluated in this study. To understand the psychological state of each participant, a mood state, which is an ever-changing psychological response in relation to situations, should be evaluated subjectively, in addition to examination of the psychological characteristics as an individual feature[20]. This study aimed to evaluate changes in the mood of nursery school teachers who participated in AAA and examine the effects of AAA on their psychological responses. Furthermore, we assessed the necessity of an environment in which animals are present in nursery schools.

MATERIALS AND METHODS

Study and setting

This was a quantitative and quasi-experimental study.

Ten nursery school teachers who did not fear or dislike dogs were included in this study after obtaining their consent. This study was conducted at a single nursery school between October and November 2021.

Survey

The psychological responses of the nursery school teachers were evaluated before and after AAA using a mood questionnaire developed by Sakano *et al*. This questionnaire enables subjective and multifaceted measurements of changes in mood states within a short time. The questionnaire comprises a total of 40 items (Table 1), which consist of eight items based on the following five factors: (i. tension and excitement, ii. refreshing mood, iii. fatigue, iv. depression, and v. anxious mood). The questionnaire is scored on a four-point scale (strongly disagree [1 point], disagree [2 points], agree [3 points], and strongly agree [4 points]).

AAA was implemented as a programme of AAE by handlers at the nursery school. The nursery school teachers freely interacted with dogs while watching over their students. AAA was conducted once a week on a weekday, with a maximum of six kindergarteners per session, and they freely interacted with the dogs for 10 min. Kindergarteners who were not in the mood for AAA did not participate or were taken to another classroom during the course of the activity. Playground equipment, toys, and posters were removed from the classroom so that they could focus on interacting with the dogs. AAA was implemented two to three times according to the number of kindergarteners; therefore, the nursery school teachers were involved in the activity for 30-40 min. AAA was conducted using two dogs by two handlers. Considering the safety of the children, dogs were preferably used in this study because they are responsive to human guidance. As a stricter safety measure, therapy dogs, which were trained to respond to their handlers' commands, were selected. Specifically, the therapy dogs used in AAA were trained in accordance with the regulations provided by the Yamanashi Therapy Dog Club. By taking into consideration zoonotic diseases, the dogs periodically received vaccinations, check-ups, and examinations. A male golden retriever (assistance dog for the disabled, career-change dog) and a female toy poodle (therapy dog) were used. Because AAA was conducted by the handlers, the teachers were able to interact with the dogs solely or with the child, watching the activity, talking to the dogs, and watching over the children involved in the interactions with the dogs.

Statistical analysis

Psychological changes in the nursery school teachers before and after AAA were evaluated using the mood questionnaire. The data obtained from the study were analysed using IBM SPSS Statistics 26. SPSS was used to analyse data before and after the activity. The mean value and standard deviation were calculated, and the results were analysed using non-parametric testing (Wilcoxon's test).

Ethics

Study participation was independently requested by researchers who had no direct competing interests with the participants or nursery school. The participants were provided with a written and oral explanation of the following points: 1) objectives and significance of the study, 2) that participation in the study was based on the participants free will, 3) that they were free to refuse to participate and could withdraw their consent at any time, and in the event of such cases, would not suffer any disadvantages, 4) that their personal information would be handled with

Table 2: Mean and SD of question items before and after AAE

		Average		SD		p			Average		SD		p
		Before	After	Before	After				Before	After	Before	After	
I	1	1.79	2.10	0.620	0.724		IV	25	1.45	1.07	0.506	0.258	***
	2	1.62	1.83	0.561	0.711			26	1.41	1.03	0.501	0.186	***
	3	1.76	1.41	0.739	0.568			27	1.34	1.03	0.484	0.186	**
	4	2.00	1.52	0.655	0.829	*		28	1.34	1.03	0.484	0.186	**
	5	1.17	1.00	0.384	0.000			29	1.41	1.10	0.501	0.310	**
	6	1.57	1.04	0.742	0.189	*		30	1.38	1.03	0.494	0.186	**
	7	1.38	1.1.	0.561	0.310			31	1.38	1.03	0.494	0.186	**
	8	1.24	1.00	0.435	0.000			32	1.31	1.03	0.471	0.186	*
II	9	2.17	2.14	0.539	0.693		V	33	1.83	1.66	0.848	0.670	
	10	2.69	2.48	0.604	0.785			34	1.66	1.41	0.614	0.568	
	11	2.07	2.34	0.371	0.769			35	1.83	1.55	0.759	0.632	
	12	2.55	2.69	0.506	0.541			36	1.69	1.59	0.541	0.682	
	13	2.93	3.17	0.371	0.468			37	1.79	1.41	0.559	0.501	*
	14	2.93	3.17	0.530	0.539			38	1.79	1.59	0.620	0.568	
	15	2.93	3.00	0.371	0.463			39	1.76	1.52	0.739	0.574	
	16	3.00	3.10	0.463	0.409			40	1.59	1.38	0.568	0.561	
III	17	1.45	1.21	0.572	0.491								
	18	1.52	1.21	0.574	0.491								
	19	1.48	1.14	0.509	0.351	*							
	20	1.28	1.10	0.455	0.310								
	21	2.00	1.68	0.598	0.670	*							
	22	1.86	1.62	0.5810	0.561								
	23	1.79	1.55	0.559	0.506								
	24	1.28	1.14	0.455	0.351								

*p ≦ 0.005 * *p ≦ 0.001 * * *p < 0.000 :Wilcoxon

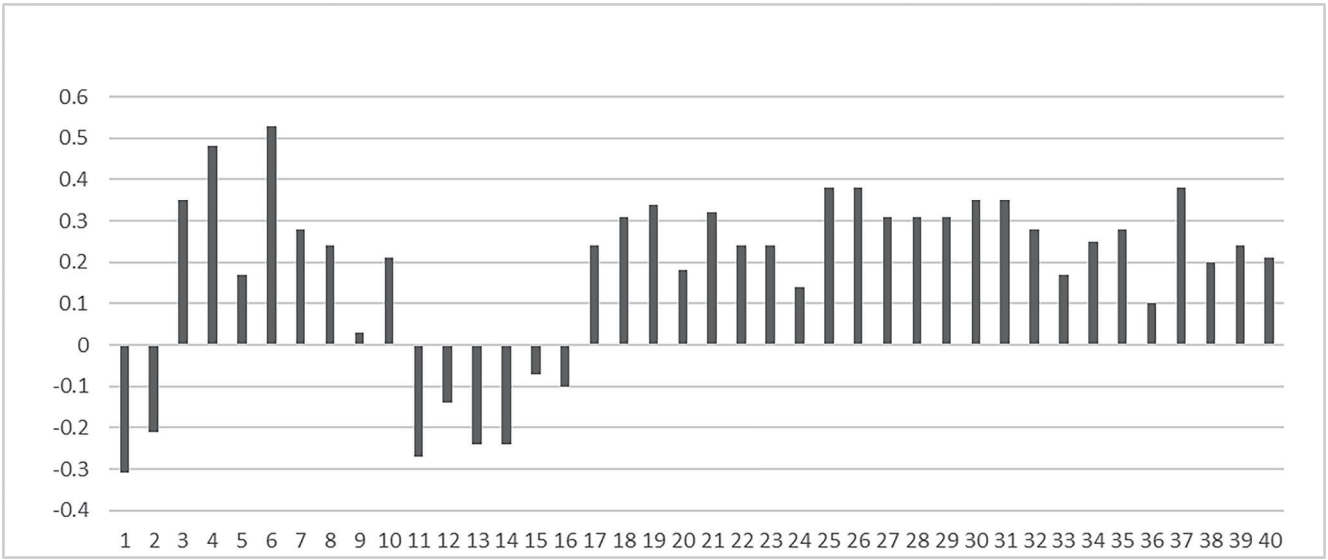

Figure 1: Difference in average of question items before and after AAE

privacy, 5) that the results of the study would not be used for anything other than the study objectives, and 6) that the results of the study would be published in a journal or at a conference presentation. This study was conducted after approval from the Research Ethics Committee of Japan University of Health Sciences.

RESULTS

Ten nursery school teachers were included after obtaining their consent. They were females in their 20s to 50s (20s: one woman, 30s: five women, 40s: three women, and 50s: one woman).

The mean value of each item in the mood questionnaire was calculated before and after AAE (Figure 1). The largest difference was observed in the item '6. I am panicked', followed by the item '4. I am fidgeting'. These two items were included in the factor 'I. tension and excitement'.

The mean standard deviation of each item in the mood questionnaire was calculated before and after AAE. Significant differences were observed in the following items: I. tension and excitement; '4. I am fidgeting' p ≦ 0.005) and '6. I am panicked (p ≦ 0.005), III. fatigue ; '19. I am reluctant to do it' (p ≦ 0.005) and '21. I am feeling tired for no reason' (p ≦ 0.005) , IV. depression mood ; '25. I become depressed' p < 0.000), '26. I feel blue and depressed' (p < 0.000), '27. I feel miserable' (p ≦ 0.001), '28. I am disappointed' (p ≦ 0.001), '29. I feel down' (p ≦ 0.001), '30. I am having a tough time' (p ≦ 0.001), '31. I feel empty' (p ≦ 0.001) and '32. I feel lonely' (p ≦ 0.005) , V. anxious mood ; '37. I am confused' (p ≦ 0.005). All items in the factor 'IV. depression mood'

showed significant differences, which was interesting (Table 2).

DISCUSSION

Changes in the psychological responses of nursery school teachers were evaluated before and after AAA using the mood questionnaire. Significant differences were observed in two items of the factors 'tension and excitement' and 'fatigue', one item of the factor 'anxious mood', and all items of the factor 'depression mood.' The questionnaire enables the prompt detection of psychological changes associated with mood states and relaxation[20]. The results of this survey suggested that nursery school teachers became relaxed after AAA. Okamoto(2016) established an association between the mood questionnaire and a stress scale[22]. Taken together, these facts suggest that AAA was able to relieve stresses associated with nursery school teachers.

According to Kimura (2016), childcare is commercialised and its needs are becoming increasingly diverse[6]. Basically, childcare work is passive and heteronomous, and individuals who are involved in this work are expected to work overtime while completing several tasks. They are always overwhelmed with work in a tense atmosphere, and diverse and multifaceted communication skills are required. Furthermore, they need to acquire and develop the skills to handle the problem of monster parents, who are difficult to deal with. The direct implications are that the teachers are exposed to physical and psychological stress. Against this background, they need to have emotional flexibility for tolerating others coupled with stable mental states. Because of a rapid change in their working environment, nursery school teachers are required to meet many social requests; hence, they experience a high level of stress while carrying out their duties. The adverse impact of stress may result in decreased mental health conditions and negative effects on their interactions with children. To address these problems, stress and its associated mental health in nursery school teachers have received attention[6]. It is important to improve their highly stressful working environment. As a necessary approach to solving current problems, AAA contributes to maintaining/improving mental health and decreasing the level of stress.

In adulthood, people are frequently exposed to diverse types of stress because their roles and responsibilities in their homes and workplaces become burdensome, social interactions and human relationships become broader, and they face complicated issues. Under such circumstances, appropriate stress management is required to maintain a physically and mentally stable state[23]. For example, an emotion-based coping strategy involves a change of pace and relaxation behaviour[24]. AAA is a stress-coping approach for nursery school teachers during adulthood. 'Depression mood' is based on emotional changes, and it affects thought, motivation and behaviour when the person is depressed. Thus, it is directly related to the quality of people's daily and social lives. Severe depression mood causes physical and mental deterioration; possibly resulting in the onset of a disease[25,26]. In this study, all items in 'depression mood' showed significant differences, indicating that AAA positively impacts depressed feelings and living energy. Therefore, the activity potentially eliminates influences associated with depressed feelings.

The implementation of AAA as an AAE programme has positive effects on children. Furthermore, their teachers became relaxed through AAA in the course of their work. In other words, AAA is a tool that has the capacity to reduce stress. This study suggested the usefulness of AAA and the importance of an environment in which animals are present in nursery schools. However, this study has several limitations. First, the sample size was small. Second, the participants were only females. Third, evaluation by age groups was not performed. In addition, AAA was conducted during working hours, and the children's interferences through actions and words may have affected the relaxation state of the teachers. Further studies are required to assess these factors, with the aim of establishing a method and creating a program based on AAA.

CONCLUSION

This study showed that AAA had relaxation effects on nursery school teachers. Furthermore, it reduced their stress levels. Therefore, AAA is positioned as a stress-coping approach for them, and it potentially eliminates their physical and mental changes and the decrease in the quality of their daily and social lives associated with depressed feelings.

This study demonstrated very interesting results, suggesting the importance of an environment in which animals are present in nursery schools. We will improve the reliability of this study by adding more subjects. Furthermore, we will spread information about the usefulness of an environment where animals are present.

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