

Chapter XX

Validity verification of coloring recreation taken place at pay nursing home

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ABSTRACT

In Japan aging has proceed at a rapid rate, because of a great extension of the average life span by the improvement of the living standard. In 1970 it became aging society and rushed into the aged society in 1994. When this tendency continues, one person in four people comes to enter the age of senior citizen in 2015.

The numbers of dementias patients are also increasing and it has become 1.7 million people in year 2005. It is forecasted to increase up to 2.5 million in the year 2015. Therefore, the coloring which is assumed to be effective to activate the brain and to prevent dementia was paid to attention.

When starting coloring, people needs to observe the original picture carefully. At this time, lobus occipitalis that take charge of the sight work. Moreover, to understand the original picture accurately, the temporal lobe that takes charge of the memory works to refer from the memory the shape and the color sow in the past. The parietal lobe cooperates when the balance of the entire picture is gripped. As written above coloring has the effect to activate a widespread area of the brain.

In this study coloring was taking place at the pay nursing home for the aged tenant as part of the recreation, and the influence to the tenant was analyzed. As an early stage of this experiment we tried to verify which writing equipment can give more effective influence to the brain activity during coloring.

Keywords: brush, coloring recreation, dementia prevention

1. INTRODUCTION

Aging has becoming a serious problem in wide area of the world, as of October 1, 2010, the elderly population aged 65 and over became 2.9 million people to be the highest ever in Japan. Moreover the proportion of the population of the total population over the age of 65 was also recorded the highest of 23.1%. When this tendency continues, one person in four people comes to enter the age of senior citizen in 2015. The stimulus from the outside might decrease when the senior citizen moves in the hospital or the nursing facilities such as pay nursing home, which can lead to the appearance of dementia and the progress of the needing care degree as a result. Therefore, various measures for dementia prevention are taken place in many places.

In Japan, transcribing a sutra is performed from ancient times for mental concentration, nevertheless there are difficulties for the aged person to

transcribing a sutra because writing a Chinese character is very delicate work. Accordingly, coloring which is more easily carried out was paid to attention. In this study coloring was taking place at the pay home for the aged tenant as part of the recreation, and the influence to the tenant was analyzed.

2. EXPERIMENT

2.1 Changes of brain activity by difference of writing equipment

As an early stage of this experiment verification of optimal writing equipment during coloring, which can give more effective influence to the brain activity was carried out. The experiment was carried out with four different writing equipment's such as crayon pastel (SAKURA COLOR PRODUCTS CORP), colored pencil (MITUBISHI PENCIL CO., LTD.), felt-tipped marker (Too Corporation.), and color brush pen (soliton corporation CO. LTD.). Mind Set (Neuro Sky Inc.) was used for the brain activity measurement. The brain activity during coloring in each case was measured.

Mind set enables to measure brain wave information on the alpha wave, beta wave, theta wave, and delta wave, then analyzed by an original algorithm and calculated as attraction (concentrated level) and meditation (relaxation level).

Seven postgraduates cooperated in this experiment as a test subject. To make experimental conditions impartial, each writing equipment was measured in the same time zone of a different day using the same laboratory where isolated from external sounds. After having installed the Mind set, a test subject rested for three minutes to record the brain wave at the rest situation, then start coloring for five minutes.

The reason for having experimented on postgraduates instead of senior citizen was because it is necessary to wear the headgear for the measurement of the brain activity. We have judged that a mental and physical load would be too large for the senior citizen. Fig 1 shows the measurement scenery.



Fig.1 Measurement scenery of brain activity measuring.

2.2 Coloring recreation at pay nursing home

The coloring was taken place at the pay nursing home as part of the recreation for 56 tenants. The frequency of the recreation carried out was 2~3 times a week, and each recreation was about 1.5 hours. The frequency of the fall accident and the number of the nurse call (sensor mat type) before and after the recreation was recorded.

3. RESULTS AND DISCUSSIONS

3.1 Changes of brain activity by difference of writing equipment

The result of the attention growth rate from at rest situation on each writing equipment's is shown in Fig.2.

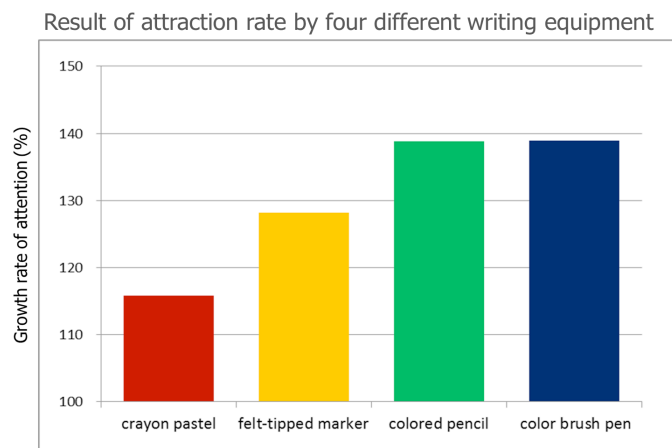


Fig.2 Attention growth rate from at rest.

As for degree of concentration, in the colored pencil and the color brush pen, 39% expansion was seen from the rest situation. That is to say when colored pencil and the color brush pen are used for coloring, degree of concentration increases more and it can expect an effect to brain activation.

The result of the meditation growth rate from at rest situation on each writing equipment's is shown in Fig.3.

Result of meditation rate by four different writing equipment

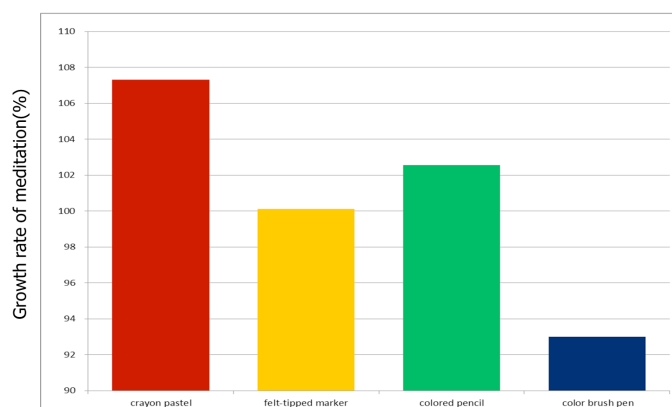


Fig.3 Meditation growth rate from at rest.

The degree of meditation brought a result in which only color brush Pen decreases in number with 93% of a ratio at the time of coloring experiment. This is to consider that color brush Pen has the softest tip in four writing equipment's, therefore not only a motion of the direction of XY axis, test subject needed to pay attention also in the up-and-down direction of the Z-axis causing meditation rate to decrease during coloring. From this result, color brush Pen is presumed as the most appropriate writing equipment during the coloring recreation taken place at pay nursing home.

3.2 Fall accident number and nurse call frequency investigation

The number of the fall accident per month before and after the recreation is shown in Fig. 4 and the frequency of the nurse call is shown in Fig.5. The averages of fall accident per month at pay home facilities decreased to 4.6 times

from 10.7 times which in the percentage by 57% decrease. When the frequency of the recreation including coloring increased, the frequency of the nurse call decreased to average of 832 from 1469. The decreasing percentage was 35%.

Number of fall accident before and after recreation

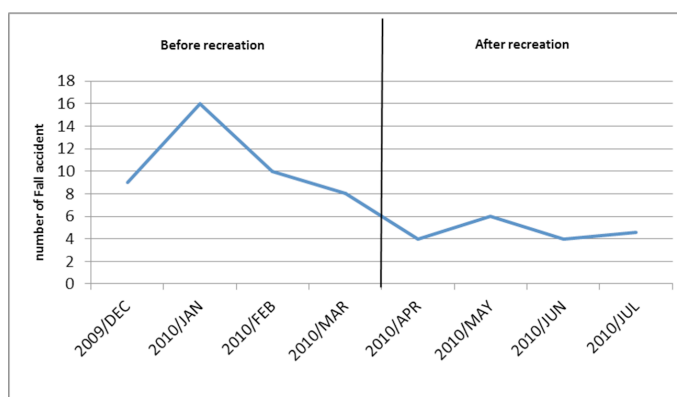


Fig.4 The number of fall accident before and after recreation.

Number of nurse call before and after recreation

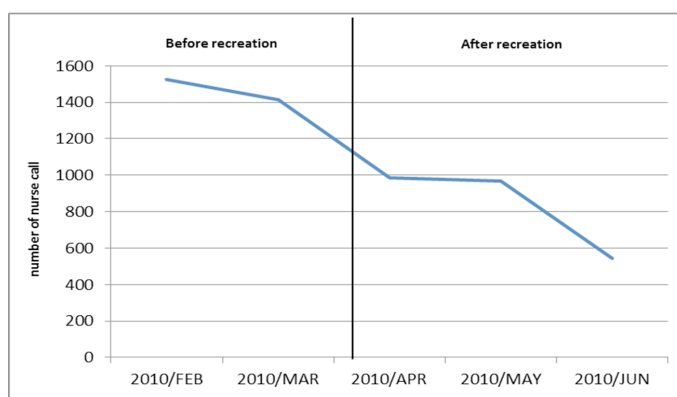


Fig.5 The number of nurse call accident before and after recreation.

There are usually a lot of nurse calls at nighttime when the helper's round is fewer compare to day time. When you increase the frequency of the recreation including the coloring, the frequency of the nurse call decreased. It is suggested

the possibilities of the brain and the body received stimulation and produce fatigue which might have led to enough and refreshing sleep at night. Additionally, though it is a result of only the woman, research results are reported that the fall accident risk is higher to an aged woman with short sleeping time. The result shows that good quality sleep was urged by the recreation including coloring recreation, and the possibility of causing a decrease of the fall accident was suggested.

4. CONCLUSIONS

In this study, it was suggested that the coloring showed effect to improvement in quality of the sleep and the fall accident prevention of the senior citizen. Coloring is easily done compared to painting and descriptions, also regardless to the needing care degree, more over a care worker's burden can also be reduced. As the result shows, coloring is suggested as an activity that should be taken as one of the recreations at the pay nursing home.

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