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Effects of recreational activity level on intellectual and physical capacities of disabled elderly nursing home residents

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Abstract

Disabled elderly residents in nursing homes often do not receive individual physical therapy treatment sessions. Instead, group recreational activities are sometimes performed. There has been little research done in this field, and the intellectual and physical effects of participation frequency in recreational programs has not been clarified. The purpose of this study was to investigate whether or not participation frequency in recreational activities has an effect on the intellectual and physical abilities of disabled elderly nursing home residents. Forty-three subjects, with an average age of 80.2 years, were divided into two groups, and the study was conducted for one year. Group A subjects participated in recreational activities 1.5 times per month, and Group B subjects received activities on an average of 12 times per month. Activities included reading the Buddhist Sutras, crafts, bench soccer, balloon volley ball, and group games. The Japanese Hasegawa Revised Dementia Rating Scale (HDS-R) was used to measure the intellectual abilities of the subjects, and the Functional Independence Measure (FIM) was used to measure their physical capacities. The Wilcoxon matched-pairs signed-rank test was used to assess the differences between groups and between periods. The correlation between the HDS-R and FIM results was determined by the Spearman rank correlation coefficient.

Initially, the HDS-R scores between Groups A and B were not significantly different. However, after one year, the HDS-R scores for the subjects in Group A were not only significantly inferior to those of Group B, but there was also a significant decrease in the scores at the end of the study. The FIM scores of Group A were significantly inferior to those of Group B initially, and a significant decrease was found at the end of the study. The relationship between intellectual and physical abilities for Group A subjects was significant at the initial stage of the study but not at the end. Both the HDS-R and FIM scores for the subjects of Group B were maintained at the same level throughout the study. Therefore, taking an active part in recreational programs that include physical activities may help in the prevention of decreased intellectual and physical functions for disabled elderly persons residing in nursing homes.

Key words : disabled elderly in nursing homes, recreational activities, dementia, activities of daily living

Introduction

Japan's elderly population is gradually increasing, while the number of young people is decreasing. "Rehabilitation of the chronically ill and ageing population is a major problem of increasing magnitude...The goal of rehabilitation is restoration of the person to the greatest possible personal, social and economic usefulness, with independence according to capabilities."[1] Many of the elderly are chronically ill and are in nursing homes, and these residents often become dependent and vulnerable [2,3]. Residents become deprived, and "Institutional deprivation may be physical, intellectual or spirtual." [4] The Japanese Ministry of Health and Welfare will implement a new "Gold Plan" to try to provide care for the increasing numbers of the ageing population. The number of nursing homes and day care centers are increasing tremendously. However, individual therapeutic sessions are still rare, and rehabilitation is often minimal. Consequently, restoration of function of the elderly disabled in nursing homes is often not achieved. In place of individual therapy, many nursing homes in Japan resort to group recreational activities that are intended to suit the residents' abilities. These activities are aimed at increasing the residents' general intellectual and physical functions, activities of daily living, and ability to move around and explore their environments, in hopes of improving the individual's attitude and quality of life. However, little research has been done in this area to show the effectiveness of such activities.

Purpose

Although recreational activities for the disabled elderly in nursing homes presently plays an important role in many institutions in Japan, the effects of participating in such activities, the frequency of participation, and the effects of physical activity on intellectual capacity have not been clarified. Little research in this area has been done.

The purpose of this study was to investigate whether participating in and the frequency of participation in group recreational activities are related to the maintenance and/or improvement of intellectual and physical abilities for disabled elderly residents of nursing homes. This study is based in part on a previous study done by several of the authors.[5]

Method

The subjects included 43 disabled elderly persons in a nursing home, 16 male and 27 female, whose average age was 80.2, ± 7.5 years. Originally, all of the 68 residents were included at the beginning of the program, but only 43 subjects continued with the program for one whole year, from April 1, 1996 to March 31, 1997. The subjects were free to decide when and how often they would participate in the recreational activities. At the end of the study, the subjects were techniquely divided into two groups according to the number of times they participated in recreational activities over the year. The A-group subjects participated less than 4 times per month, 0-48 times during the year, and the B-group subjects participated more than 5 times per month, more than 49 times during the period.

The recreational activites were selected by the residents and included various activites. In the mornings, reading the Buddhist sutras (Figure 1), singing songs, exercising, and making crafts (Figure 2) were done. In the afternoons, playing bench soccer (Figure 3), balloon volleyball (Figure 4), and recreational group games (Figure 5) were done. These activities were conducted by three of the nursing home staff. Activities were done daily, except for all day Sundays and Wednesday and Saturday afternoons.

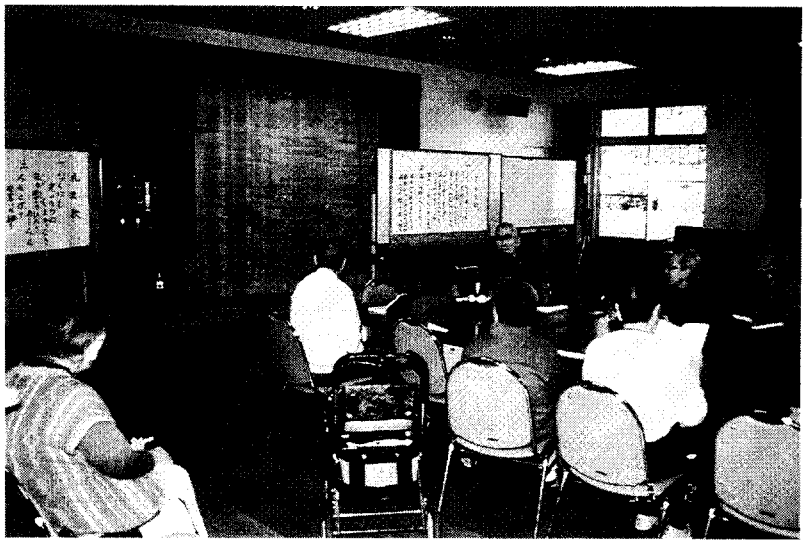

Figure 1: Reading the Buddhist Sutras

Figure 2: Making crafts

Figure 3: Playing bench soccer

Figure 4: Balloon volleyball

Figure 5: Recreational group games

The Japanese Hasegawa Revised Dementia Rating Scale (HDS-R) was used to measure the intellectual function of the subjects. The Functional Independence Measure (FIM) was used as the parameter to measure their physical capabilities and activities of daily living performance. These parameters were used to measure the effect of participation in recreational activities. Measurements were taken at the beginning of the study and again at the end.

These assessments were done by the nursing home staff members who worked closely with the residents. The staff members were instructed in how to perform the tests accurately by one of the authors. When several staff members were involved in the assessment of one person, the lowest score obtained was selected.

Statistical analysis included the paired t-test to assess age difference between the two groups. The Mann-Whitney test was used to compare the HDS-R and FIM tests. The Wilcoxon matched-pairs signed-rank test was used to compare the differences between the HDS-R and FIM tests given at the beginning and at the end of the study for each group. The correlation between the HDS-R and FIM tests before and after the recreation period was determined by using the Spearman rank correlation coefficient.

We set the level of significance at $p < 0.05$ as the minimal acceptable level.

Results

The average number of times for participating in recreational activites was 1.5 per month (17.7 per year) for the subjects in Group A and 12 per month (172.1 per year) for Group B. The average age of the subjects in Group A was 81.35 years and in Group B was 79.23 years. The difference in age between the two groups was found not to be significant.

The average values for the FIM results was 61.7, ± 29.6 in Group A and 89.3, ± 27.6 in Group B. The average values for the HDS-R results was 51.6, ± 34.0 in Group A and 84.3, ± 30.2 in Group B. Initially, the difference in the HDS-R scores for the two groups was not significant. However, after one year, the HDS-R scores for the subjects in Group A were not only significantly inferior to those of Group B, but there was also a significant decrease in the scores at the end of the study ($p<0.05$). In addition, the FIM scores of Group A were significantly inferior to those of Group B initially, and a significant decrease was found at the end of the study ($p<0.05$) (Table 1).

Table 1: Average Scores

	Age	Sessions Per Month	HDS-R Pre-test	HDS-R Post-test	FIM Pre-test	FIM Post-test
Group A	81.4	1.5	9.7	6.9	61.7	51.55
Group B	79.2	14.4	13	10.913	89.26	84.261

Table 2: Correlation Between HDS-R and FIM Scores

	Pre-test	Post-test
Group A	0.61	0.47
Group B	0.16	0.09

The correlation between the HDS-R and FIM scores was 0.61 on the initial test and 0.47 at the end of study for Group A. For Group B, the correlation between the HDS-R and FIM scores was 0.16 initially and 0.09 at the end of the study (Table 2).

There were no significant differences found in the scores ($p>0.05$). The relationship between mental and physical abilities for Group A subjects was significant at the initial stage of the study but not clear at the end. However, the relationship between mental and physical abilities for Group B subjects was not significant at both stages of the study.

Discussion

The reason for the highly significant correlation between the HDS-R and FIM scores initially in Group A may be a consequence of the degree of disability already present in the members. Group A consisted of two types of members. Some members had difficulties in participating in the recreational activities, because they had severe physical limitations that interfered with their general movements and willingness to initiate interest. The rest of the members of this group were able to move about, but they expressed little interest in the activities presented. The significant decrease in both the HDS-R and FIM scores over the year in this group may suggest that limited physical activities may result in a decreased intellectual capacity. The development of dementia may be one of the complications resulting from this lack of movement.

The members of Group B were interested in recreation, and they took an active part in recreational programs. They were able to maintain their physical and mental functions throughout the study, which leads us to believe that physical activities may help in the prevention of decreasing intellectual and physical functions for disabled elderly persons residing in nursing homes.

Conclusion

As a result of this study, the authors believe that providing the residents of nursing homes, particularly the disabled elderly residents, with a program of varied recreational activities is beneficial. These activities not only help them maintain or improve their physical capabilities, but also their intellectual functions.

There is little research available in the literature on this subject, but there is a great need to conduct such research. The increase in the ageing population, along with a decrease in the younger population, puts a demand on providers of therapeutic services to fulfill the needs of that population with group activities. Recreational activities not only provide physical benefits, but they also provide intellectual and spiritual benefits as well.

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特別養護老人ホーム入所高齢障害者の知的及び身体的能力に及ぼすレクレーション活動への参加頻度の影響

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抄　録

特別養護老人ホーム(以下，特養)入所高齢障害者に対し，個々に理学療法が実施されることは少ない。グループによるレクレーション活動はよく実施されるが，この分野における研究はほとんど見当たらない。レクレーションプログラムへの参加頻度が知的および身体的に及ぼす効果は未だ明らかにされていないため，レクレーション活動への参加頻度が特養入所高齢障害者の知的及び身体的能力に影響を与えるかどうかについて研究を行った。平均年齢80.2歳の43名の被験者を二つのグループに分け，1年間調査を行った。A群被験者は，月平均1.5回のレクレーション活動に参加し，B群被験者は月平均12回のレクレーション活動に参加していた。グループでのレクレーション活動は，お経，手工芸，ベンチサッカー，風船バレーとゲームであった。改訂版長谷川式簡易知能スケール(以下 HDS-R)を被験者の知的能力の測定に使用し，機能的自立度評価(以下 FIM)を身体的許容能の測定に使用した。Wilcoxon の順位和検定を群間及び期間での差の検定に使用した。HDS-R と FIM の相関については Spearman の相関係数を用いた。開始当初，A群及びB群間の HDS-R スコアに有意差は認められなかった。しかし一年後B群と比較しA群被験者の HDS-R スコアが有意に低いのみでなく，最終調査時でA群のスコアの有意な減少を示した。FIM スコアについては，B群と比較しA群において調査開始時に有意に低い値を示し，最終調査時においては有意に減少していた。A群被験者における精神及び身体的能力間の関係は，調査開始時点では有意差を認めたが最終時は有意差を認めなかった。B群被験者の HDS-R と FIM の両スコアは，調査期間を通して同じレベルを維持していた。

身体的活動を含むレクレーションプログラムにおいて，活動的要素を取り入れることは，特養入所高齢障害者の知的及び身体的機能の低下防止に役立つ可能性が考えられた。

キーワード：特別養護老人ホーム入所高齢障害者，レクリエーション活動，痴呆，日常生活動作