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Adjusting the Daily Activities of Seniors Living in Nursing Institution as a Method to Address the Occurrence of Depression

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Abstract: *This research, which took four months to complete, seeks to predict the efficacy of intervention strategies, including changes to daily schedules and the introduction of light-intensity physical activity, at addressing depression in seniors at two nursing institutions. A quasi-experimental design was adopted and supplemented with case discussions, participant observations and unstructured interviews. The study also used the Taiwanese Depression Questionnaire (TDQ) to record data before and after the aforementioned interventions with different groups of seniors. The research concludes that reducing time spent sleeping and watching TV as well as including more activities and opportunities for social interaction in the daily lives of residents had a positive impact on the occurrence of depression.*

Keywords: *nursing institutions for seniors, depression, daily activities, intervention care program*

1. Research Background and Objectives

1.1. Research Background

As of late 2010, there were 2,487,893 seniors in Taiwan over the age of 65, accounting for 10.74% of the total population and giving a score of 68.64 on the Ageing Index. In the years since then this number has continued to steadily increase (Department of Statistics, Ministry of the Interior, 2011a). However, statistics from the Department of Statistics (2011b) also indicate that 17% of seniors in Taiwan experience difficulty dealing with daily life, 76% suffer from chronic or critical illnesses. Moreover, this situation exists at a time when Taiwanese society is ageing and family structure changing in ways that has reduced the ability of families to care for seniors, leading to the creation of replacement care programs and institutions.

Although senior institutions based services, operating under a government evaluation system, are able to provide seniors with a comfortable and safe environment, balanced diets and professional nursing care, seniors with mental and physical disabilities and most importantly the ageing process itself makes it difficult for many to live normal lives like most people (Federation for the Welfare of the Elderly, 2004). In addition, institution based care mainly provides care for those with physical ailments, despite the fact that mental difficulties associated with biological ageing and the process of accepting the fact of ageing are often greater than that of physical difficulties (Fu Chia-hsiung, 2001). In addition, research conducted in recent years has revealed that the prevalence of depression among seniors long-term care facilities in Taiwan is as high as 52% (Lin,Wang, Chen, & Wu, 2005). Research conducted by Fan Han-hui (2001) into 10 long-term care facilities in Taichung City indicated that of seniors who live long term in care facilities 46.6% were unsatisfied with their current life, 64.3% felt that life was meaningless and 54.5% often experienced depression.

Moreover, an increasing amount of research has offered evidence that depression is more than just a psychological problem and is in fact more like a “systemic illness” that can trigger a series of physical

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and mental problems (Lai Shih-han, 2007). In other words, seniors often experience depression when in care facilities and this invariably impacts their experience of pain, which can lead to even more disabilities while also increasing illness infection rate and fatality rate increasing the burden and pressure on care givers (Peskind, 2003). As such, long-term care facilities for seniors need to attach greater importance to the occurrence of depression among seniors and seek to improve the situation, if they are to improve the mental and physical health of seniors and the quality of life they enjoy. In addition, the decline in physical function among seniors means that attention has to be paid to controlling medical treatment and diets, but an appropriate amount of participation in passive leisure activities can help to improve a range of physical functions, delay ageing and also has a positive impact on cognitive functioning and mental health (Lan Chen-hui, Lin Lian-li, Huang Heng-hsiang, 2011; Lee Yue-ping & Chen Ching-hui, 2010).

1.2. Research Objectives

The lack of service staff at seniors care facilities means that when arranging daily activities there are more passive than dynamic events and residents spend more time indoor than outdoors and afternoon rest periods are relatively long with the lights turned off so the indoor environment is dim. This life model reduces the time seniors spend in the light and also impacts the quality of nighttime sleep and exacerbates the occurrence of depression among seniors and even their mental and physical health. As such, this research looks at the effects of adjusting the timing and content of daily activities for seniors at care facilities, adopting quasi experimental research methodology to discuss the impact of such changes on the occurrence of expression among seniors.

2. Literature Review

2.1. Reasons for the occurrence of depression among seniors

As people age they experience clear mental, physical and social changes, many of which are related to “a sense of loss.” Examples include retiring from the workplace and losing one’s job; major decline in physical functions, ailments that come with ageing and loss of health; death of friends and relatives, reduction of interpersonal relations (Wen Ming-ching, 2007).Moreover, senior health covers a wide range of issues that can be explained from the perspectives of physical health, mental health and social interactions. These can cause depression in multifarious ways and patients with different education and life backgrounds, frequently use different self defense mechanisms and these reflect different clinical symptoms (Chien Chih-cheng, 2010). Certain sufferers from atypical depression show almost no symptoms of depression and such sufferers seek to avoid socio-psychological stress by mainly complaining of physical ailments as a way of attracting the attention and concern of family members (Huang Chao, 2009). Figures show that 50% of all seniors suffering from depression are omitted as internal medicine or family medicine inpatients because seniors often use physical ailments as a cover for their depression (Hung Chin-yi, 2007)

Numerous other surveys have also revealed that the longer seniors spend in bed the shorter the time they actually sleep and the more often they doze off during the day (Buysse, Browman, Monk, Renolds, Fasiczka, & Kupfer, 1992). This is particularly true for seniors with cognitive function issues at long-term care facilities who spend a lot of time in their rooms and have fewer opportunities to go outside into the sunlight. This impacts the emotional state of seniors and quality of sleep leading to seniors falling asleep during the day and suffering from insomnia (Skjerve, Bjorvatn, & Holsten, 2004). In addition, Hsieh Chia-jung (2010) researched seniors at 15 care facilities in Kaohsiung City finding that age and cognitive function impacts the extent to which senior residents suffer from depression. Furthermore, research by Lin Yi-chun, Yu Shu-wen and Chang Hung-che (2004) points out that the level of satisfaction with social support and assistance also influences the extent to which resident senior suffer from depression.

From the above review of literature we have seen that depression in seniors can be caused by such physical factors as the decline in physiological functions and reduction in vitality which can make it more difficult to control emotions, ailments and medicine; Psychologically, seniors tend to be economically dependent, see their social value fall and the role they play in their families change; and in social terms their involvement in social activities and level of social support fall.

2.2. Methods for Regulating Depression in Seniors

2.2.1. Support Groups and Improvements in Individual Treatment For Seniors Suffering from Depression

In treating depression among seniors, other than the prescription of medicine by a doctor, psychotherapy can also provide a certain degree of relief. In this respect, senior support groups and individual therapy are two types of non pharmacological therapy that have been shown to have multiple positive benefits. Group psychotherapy can be used to promote interpersonal networking between seniors and enhance social support sources, while also enriching their social life and reducing the sense of loneliness (Wen Ming-chang, 2007). In recent years, group support therapy such as reminiscence therapy has been used more frequently and this involves recollecting things and experiences from the past to alleviate a patient's condition (Hsu Pao-ying, Wang Ya-yi, Lee Yi-yu, Liu Shu-chuan, Chiu Li-jung & Hsieh Chia-jung, 2005); Music therapy, which seeks to solict a response from seniors by using their existing understanding of music and musical preferences (Chang Chu-sui, 1999). Remembrance therapy involves seniors remembering personal data or strengths already forgotten through the process of remembering (Hsiao Chiu-yue, Teresa J. C. Yin, Hsu Pi-ching, Yeh Shu-hui & Lee Yi-chuan, 2002); Horticultural therapy uses plants and gardening activities as a way to overcome various psychological disorders, improve ones mental and physical condition. In other words, this approach involves caring for another life, observing a different life cycle to address problems/bottleneck in one's own life (Huang Sheng-lin, 2007); art therapy uses a method of communication that is not dependent on language as a potential vehicle to explore one's psychological problems (Tsai Shu-hua, Hung Pao-lien & Lee Chun-te, 2010). Supportive individual therapy includes pet therapy, which has a healing effect by encouraging interactions between patients and institutionally raised or volunteer owner trained animals, that include looking after the animals, stroking them, taking them for walks and talking to them (Anderson, 1996). Intimacy massage: this involves massaging the body from the top of ones head to the torso, limbs and soles of ones feet, whether sitting, lying down or prone. This objective of this is to enhance the sense of psychological intimacy and comfort between the person giving the massage and the person being massaged (Yang Ming-lei, 2002).

2.2.2 Impact of Leisure Activities on Depression in Seniors

At present, most long-term care facilities in Taiwan focus on caring for the physical needs of seniors and assisting them with daily life activities, with very few concentrating on satisfying their mental and social needs. Such institutions also often fail to arrange social interactions and activities, leading to a gradual degeneration in the physical functions of residents (Sung Hui-chuan, 2003). Research by Luo Chun-ling, et al. (2002) discovered that a poor spiritual life, lack of rehabilitation or stimulation led to residents' emotional instability and difficulty in communicating. It also severely impaired cognitive functioning. Moreover, cognitive functioning also has a clear connection to daily life functioning, generally adjusting to life needs, interpersonal interaction skills, social and activity participation. Allowing seniors to take part in regular activities had the positive impact on self esteem and emotional mediation. It also enhanced physical capabilities, reduced the rate of decline and protected against the onset of chronic illnesses (Chen Wen-hsi, 1999). Leisure activities also proved beneficial in terms of the psychological adjustment of seniors, on the one hand by promoting a positive psychological state on the other by easing, minimizing or preventing the accumulation of negative psychological factors (Tseng Chen-yuan, Cheng Pei-hsin & Lin Hsi-pin, 2010). In summary, arranging an appropriate amount of leisure activities can have beneficial effects in reducing the occurrence of depression among seniors and also enhancing their cognitive functioning and interpersonal interaction.

2.3. Assessments Using the Taiwanese Depression Questionnaire

The Taiwanese Depression Questionnaire (TDQ) is wide ranging self-reporting depression questionnaire currently used in Taiwan (see Table 5: John Tung Foundation, 2004). This asks 18 questions each with four possible answers: These are "Little or not at all" for zero points, "Occasionally" doe one point, "Often" for two points and "Often or all the time" for three points. The depressive state of subjects is determined by their total score. (1) Those with less than eight points are emotionally stable and good at dealing with their emotions; (2) Those with 9-14 points should pay more attention to mood changes and try to determine the reasons for such changes so as to deal with them in a timely manner making it less likely to develop into full blown depression; (3) A score of 15-18 points indicates that stress levels have reached a critical point and such individuals should seek out

friends with experience in this area and talk about how they feel. Only by finding an outlet for this pressure and being able to put down the burden they carry can such individuals avoid descending into depression; (4) Individuals with a score of 19-28 points should immediately seek out the assistance of a counselor or professional medical care institution and through their help hopefully return to a normal emotional state; (5) Those with a score in excess o 28 points should seek out diagnosis and treatment from a specialist medical professional.

3. Research Design and Execution

3.1 Research Methodology

In order to meet the objectives of this research the following data collection methods were employed:

3.1.1. Literature Review

This research involved collecting and organizing of all relevant literature, including specialist books, journals and conference papers as a way of netter understanding the causes of depression in seniors and ways of dealing with it as well as the content of the TDQ and its method of evaluation:

3.1.2. Case Studies

Through discussions with directors, nursing staff, social workers, nutritionists, rehabilitation doctors and care personnel and supplementary information on the basic care of seniors (nursing records, shift handover records, social worker onsite visit records, individual rehabilitation program and implementation records for seniors, records of physiological symptoms etc.) in such facilities. This provides insight into basic physiological functioning, indications of emotional symptoms and level of social interaction in individual case studies before the introduction of experimental activities.

3.1.3. Participation-based Observation

The researchers engaged in participation-based observation using their own developed “activity participation level observation table” to record the attendance and degree of involvement of seniors in experimental activities.

3.1.4. Semi-structured Interviews

In order to gain a better understanding of any reactions or changes in the basic physiological functioning, psychological/emotional symptoms and social interaction of seniors at care facilities following the introduction of experimental activities, researchers conducted semi-structured interviews with seniors who participated in the experimental activities and staff who lead light fitness group activities from two care facilities, before, during and after the research project, while recording the main points of such interviews. Moreover, these interviews were placed in two categories: (1) Unstructured interviews with seniors: For these a large English letter was used to designated the institution, followed by a number given to the interviewee. For example “A1” indicates that the interviewee was at institution A and the interview was conducted with senior 1. (2) Semi structured interviews with staff who participated in the experimental activities from the two care facilities: For these a large English letter was used to designated the institution, followed by the Chinese characters “Zhao” for care personnel, “Fu” for rehabilitation personnel, “Hu” for nursing staff and “She” for social workers. For example, “A Fu” indicates rehabilitation medicine staff from institution A, “B Zhao 1” indicates care worker 1 from institution B.

3.1.5. TDQ Testing

Seniors who participate in these experimental activities are asked to fill in the Taiwanese Depression Questionnaire (TDQ) on three occasions (before the activities, after the first activity and after the second activity). This makes it possible to compare the relative level of depression experienced before and after the introduction of the activities.

3.2. Research Target Group

This research makes use of purposive sampling selecting 15 seniors who meet the following conditions and dependent on the care of others for certain life needs: (1) Over 65 years of age, (2) resident in a care facility for more than three months, (3) Clear headed and able to communicate in mandarin Chinese, Taiwanese or Hakka, (4) Must record a score of above 9 on the first TDQ, (5) Must not have been diagnosed by a doctor as suffering from a mental disorder, depressive disorder (6) Willing to take part in experimental activities arranged as part of this research. Seven of the chosen

seniors were resident at Institute A, an old-style townhouse with a quite large outdoor area located in a residential area on the outskirts of Taipei City, whereas the remaining eight seniors were resident at Institute B, located in a general use commercial building in Taoyuan City. During the research, two seniors at Institute B were unable to participate in all the experimental activities and as such this discussion focuses on changes observed in the occurrence of depression among the remaining 13 seniors.

3.3. Experiment Design

Because it was impossible as part of this research to use random allocation and match groups on site, a quasi experimental unequal sampling approach was designed (as seen in Table 1) to guide our experimental investigation.

Table 1. *Quasi Experimental Research Design of this Project*

Group	First TDQ Test	Experiment Handling	Second TDQ Test	Third TDQ Test
Outdoor Activity Group (Institute A)	0_1	X_1	0_2	0_3
Indoor Activity Group (Institute B)	0_4	X_2	0_5	0_6

Notes:

0_1: The outdoor group undergoes the first TDQ Test one week before experimental activities are initiated

0_2: The outdoor group undergoes the second TDQ Test one week after experimental activities are concluded

0_3: The outdoor group undergoes the third TDQ Test within two weeks of the conclusion of experimental activities

0_4: The indoor group undergoes the first TDQ Test one week before experimental activities are initiated

0_5: The indoor undergoes the second TDQ Test one week after experimental activities are concluded

0_6: The indoor group undergoes the third TDQ Test within two weeks of the conclusion of experimental activities

X_1: For the outdoor activity group, experimental activities included 48 outdoor light exercise group activities over a four month period

X_2: For the indoor activity group, experimental activities included 48 indoor light exercise group activities over a four month period

3.4. Research Implementation

The introduction of the experimental activities that are the focus of this research involves adjusting daily schedules to include light exercise group activities (Institute A outdoors, Institute B indoors) and the use of TDQ to better understand any changes in the occurrence of depression among seniors before and after participating in these activities.

3.4.1. Adjusting Scheduling of Daily Activities

In table 2 meal times and bathroom breaks remain unchanged, but time sleeping is reduced from 11 hours to nine, the objective being to reduce the length of time spent by seniors lying down trying to get to sleep; time spent watching TV is reduced from 5.5 hours to four, to reduce the amount of time senior spend sat in wheelchairs or indoors. Activity and other time is increased from 2 hours to 5.5 hours. These changes represent an attempt to diversify the daily schedules of resident seniors.

Table 2. *Comparison of Changes Made to Daily Schedule*

Item / Activity	Pre-Adjustment Time	Adjustment Percentage	Post-Adjustment Time	Post-Adjustment Percentage
Sleep	11	46%	9	37.5%
Meals	3	12.5%	3	12.5%
Watching TV	5.5	23%	4	17%
Washing Hands and Face	2.5	10%	2.5	10%
Activities and Others	2	8.5%	5.5	23%
Total	24	100%	24	100%

3.4.2. Arranging and Recording Light Exercise Group Activities

Table 3 presents experimental activities divided into 48 light exercise activities over a four month period. Each group engaged in 40 minutes of activity three times a week (all in the morning). The content and scheduling of these activities involved alternating a number of light exercise group activities. In addition, staff and researchers leading the activities recorded the attendance and degree of participation of seniors at both institutions in a "Activity Observation and Participation Table."

Table 3. *Light Exercise Group Activity Content and Scheduling*

Item / Time	Activity	Content	Items to Note
Ten minutes before activity starts	Warm up: Hand exercises	This focuses mainly on the upper limbs and is accompanied by music.	Seniors are encouraged to do the exercises correctly to avoid a sporting injury
Activity (20 minutes)	1. Croquet	Competitive activity	The size of the balls used can be changed as needed
	2. Ball game	Focuses on upper body	The size and weight of the sandbags used can be changed as needed
	3. Ring toss	Focuses on upper body	The distance of the ring toss can be adjusted depending on the ability of participating seniors
	4.Basketball shooting competition	Focuses on upper body	The basketball hoop should be adjusted to a suitable position
	5. Dragon ball rolling	Focuses on upper body with secondary focus on lower limbs	A reasonable distance must be maintained between seniors rolling dragon balls
	6.Percussion music	Focuses on upper body	Three groups of percussion instruments are prepared for seniors to choose from
	7. Movements	Each event reviews the previous lessons movements and introduces new music	The rhythm of this activity must not be too quick and each movement should be repeated several times
	8. Hockey	Involves cardboard boxes, cardboard sticks and a softball	When necessary care staff will assist seniors with their movements
Ten minutes after activity concludes	1.Simple breathing exercises; 2.Group discussions, experience sharing	Seniors are given a cup of tea and encouraged to physically relax. The activity is followed by group discussion and experience sharing	No negative criticism is allowed

3.4.3. Conducting TDQ

The first TDQ was conducted one week before the experimental activities were introduced. To enhance the credibility of post activity evaluation, second and third TDQ Tests were conducted one week and two weeks after the activity ended respectively.

4. Research Results and Discussion

4.1. Level of Senior Participation – Observation Record and Analysis

Researchers and care personnel designed the "activity participation observation table" to gain a better understanding of senior participation in the experimental activities and to present an operational definition of target behavior completion rate. The graded target items are shown in table 4: "Degree of Involvement," "Duration," "Frequency of Interaction," "Non Verbal Expression" and "Degree of Pleasure." Scores were given based on target behavior completion rate, with 1 point for 50%, 2 points for 75% and 3 points for 100%.

Table 4. *Standard Grading Standard for Activity Participation*

Achievement Rate / Item	Target Behavior Completion Rate 50% (1 point)	Target Behavior Completion Rate 75% (2 points)	Target Behavior Completion Rate 100% (3 points)
Degree of Involvement	Needs to be encouraged multiple times and helped to complete the activity by activity leader	Need to be reminded and helped to complete the activity	Proactively participates in activities
Duration	Participates in one activity or more per week	Participates in two or more activities per week	Participates in three or more activities per week
Frequency of Interaction	Responds to interaction initiated by activity leaders and participants	Makes suggestions based on needs during activities	Completely engaged in activities
Non Verbal Expression	Responds to activity leaders and participants with expressions that indicate happiness	Responds to activity leaders and participants with expressions and body language that indicate happiness	Proactively engages with activity leaders and participants with expressions and body language that indicate happiness
Degree of Pleasure	Made no request to end participation before end of activity	Participates in the full process and responds to others	Participates in the full process and proactively interacts both verbally and non verbally with others

Table 5 shows the level of participation in experimental activities by the 13 seniors. On the whole, average “Degree of Involvement” was 83.76%, an indication that the seniors proactively participated in the activities and complete each light exercise group activity under the leadership of care staff. In terms of “Duration” the average score was 80.77%, an indication that in addition to being happy to take part, resident seniors were also able to handle the physical burden involved in 40 minutes of light exercise. In the “Frequency of Interaction” category the average score was 72.08%, demonstrating that the social interaction of resident seniors was reasonable. This could indicate that resident seniors are relatively passive and do not actively discuss how they feel or their needs unless absolutely necessary. This could explain their passivity in expressing their needs as seniors will usually only discuss how they feel and their needs when asked by care staff. Indeed, seniors only proactively seek the assistance of care staff when faced with physical discomfort or a certain degree of pain. In terms of “Non Verbal Expression” the average result was 72.38%, indicating that many seniors, in addition to responding to activity leaders and participants with happy expressions while engaging in the activities, were also able to interact with others through body language. In the “Degree of Pleasure” category a result of 76.77% indicates that most seniors responded to others through the course of the activities, while some were even able to proactively make verbal and non verbal connections.

Table 5. *Senior Participation in Experimental Activities*

Observation Items / Senior No.	Degree of Involvement	Duration	Frequency of Interaction	Non Verbal Expression	Degree of Pleasure
A1	80%	80%	59%	66%	73%
A2	75%	67%	68%	68%	68%
A3	81%	88%	65%	65%	65%
A4	83%	98%	90%	93%	83%
A5	72%	64%	72%	64%	72%
A6	89%	80%	69%	74%	83%
A7	94%	76%	70%	73%	81%
B1	78%	63%	75%	68%	78%
B2	90%	97%	76%	76%	83%
B3	95%	98%	68%	73%	80%
B4	89%	77%	69%	66%	75%
B5	67%	72%	60%	62%	61%
B6	96%	90%	96%	93%	96%
Average	83.76%	80.77%	72.08%	72.38%	76.77%

Note: The percentages are calculated by taking the total score and dividing it by the number of times a senior participates multiplied by three. For example, the Degree of Involvement of senior A1 was 96/120(40×3) = 80%.

4.2. First, Second and Third TDQ Tests - Results and Discussions

Table 6 shows the results of the TDQ Test conducted before the introduction of experimental activities and the two TDQ Tests undertaken by the 13 participating seniors after the activities were completed. A comparison of the results of the first test and the subsequent tests shows a clear fall in the final score. Table 8 also shows that the overall average scores of the second and third TDQ Tests of seniors are lower than the overall averages of the first test. As such, we can surmise that the adjustment of daily routines and introduction of light exercise group activities had clear benefits in terms of reducing the occurrence of depression among resident senior. However, when we compare the results of the second and third TDQ Tests conducted after the end of the experimental activities, what we find (as seen in Table 6) is that several of the seniors experience an increase in depression. This could perhaps be caused by an evaluation error or indicate that the conclusion of experimental activities leads to an increase in depression. This issue requires further research before a more definitive answer can be reached.

Table 6. *TDQ Results*

Question No.	Item	Never or rarely (less than one day a week, zero points)			Occasionally (1-2 days a week, 1 point)			Often (3-4 days a week, 2 points)			Frequently or Always (5-7 days a week, 3 points)		
		First TDQ	Second TDQ	Third TDQ	First TDQ	Second TDQ	Third TDQ	First TDQ	Second TDQ	Third TDQ	First TDQ	Second TDQ	Third TDQ
1	I want to cry	6	10	9	4	2	2	0	1	0	3	0	2
2	I'm in a bad mood	3	4	4	3	9	7	1	0	0	6	0	2
3	I am more irascible than before	9	8	10	1	5	3	1	0	0	2	0	0
4	I can't sleep	4	4	4	2	7	6	1	2	1	6	0	2
5	I have no appetite	6	8	8	7	5	4	0	0	1	0	0	0
6	I feel a tightness in my chest	5	5	5	5	8	8	2	0	0	1	0	0
7	I feel physically uncomfortable	2	3	4	7	8	6	2	2	1	2	0	2
8	I feel physically tired, weak and listless	3	2	5	5	8	6	2	3	0	3	0	2
9	I feel anxious	3	8	4	5	5	7	3	0	1	2	0	1
10	My memory is bad	3	6	4	6	6	8	1	1	1	3	0	0
11	I am unable to concentrate	6	8	8	5	5	5	0	0	0	2	0	0
12	It takes longer to think about or do things than in the past	4	8	4	6	5	8	0	0	1	3	0	0
13	I have less confidence than in the past	5	10	8	4	3	4	1	0	1	3	0	0
14	I always expect the worst	5	9	8	3	4	4	1	0	0	4	0	1
15	I cant get over things and have suicidal thoughts	6	12	12	5	1	0	0	0	0	2	0	1
16	I have lost interest in everything	5	9	8	6	3	3	0	1	1	2	0	1
17	I feel physically uncomfortable (headaches, dizziness, palpitations or	4	3	3	6	8	9	1	2	1	2	0	0

	stomach ache)												
18	I feel useless	4	8	6	5	5	6	3	0	1	1	0	0

Table 7. *A Comparison of TDQ Results*

TDQ Type \ Senior No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6
First TDQ	23	17	18	23	13	17	19	10	22	9	32	41	20
Second TDQ	17	6	14	11	7	10	9	4	7	5	8	15	8
Third TDQ	21	8	17	15	9	10	11	3	11	5	9	27	8

Table 8. *Average Values for TDQ (N=13)*

Item \ TDQType	First TDQ	Second TDQ	Third TDQ
Total Score	264	121	154
Average Score	20.31	9.31	11.85

4.3. Changes in Senior "Self Behavior Diagnosis," "Emotional Symptoms" and "Physical Symptoms"

To further understand the impact of the experimental activities on the occurrence of depression among seniors, researchers divided the 18 statements asked in the TDQ into three categories: "Self Behavior Diagnosis," "Emotional Symptoms" and "Physical Symptoms" to be discussed in conjunction with semi-structured interview data.

Table 9. *Comparison of Pre and Post Experimental Activity TDQ Results*

Question No.	Item	Average Value		Average Value Differential (post activity to pre activity TDQ)	Pre-Post Activity TDQ Differential (Improvement or Decline)
		Pre activity TDQ	Post activity TDQ		
1.	I want to cry	1.00	.31	-0.69	▲
2.	I'm in a bad mood	1.77	.69	-1.08	▲
3.	I am more irascible than before	.69	.38	-0.31	▲
4.	I can't sleep	1.69	.85	-0.84	▲
5.	I have no appetite	.54	.38	-0.16	▲
6	I feel a tightness in my chest	.92	.62	-0.30	▲
7.	I feel physically uncomfortable	1.31	.92	-0.39	▲
8.	I feel physically tired, weak and listless	1.38	1.08	-0.30	▲
9.	I feel anxious	1.31	.38	-0.93	▲
10.	My memory is bad	1.31	.62	-0.69	▲
11.	I am unable to concentrate	.85	.38	-0.47	▲
12.	It takes longer to think about or do things than in the past	1.15	.38	-0.77	▲
13.	I have less confidence than in the past	1.15	.23	-0.92	▲
14.	I always expect the worst	1.31	.31	-1.00	▲
15.	I can't get over things and have suicidal thoughts	.85	.08	-0.77	▲
16.	I have lost interest in everything	.92	.38	-0.54	▲
17.	I feel physically uncomfortable (headaches, dizziness, palpitations or stomach ache)	1.08	.92	-016	▲
18.	I feel useless	1.08	.38	-0.70	▲

Note: 1. Improvement▲, Decline▼; 2. The post activity TDQ results shown here are an average of the second and third average TDQ results

4.3.1. Changes in Self Behavior Diagnosis

If we look at the scores for the seven questions (3, 10, 11, 12, 13, 16, 18) classified as "Changes in Self Behavior Diagnosis" from the pre-experimental activity TDQ, then with the exception of "3. I am more irascible than before" with a score of 0.69, the average value for the remaining six questions ("10. My memory is bad," "11. I am unable to concentrate," "13. I have less confidence than in the past," "16. I have lost interest in everything" and "18. I feel useless") is close to or exceeds 1.00. This highlights the fact that when diagnosing their own behavior seniors express frustration and

disappointment, an assertion for which further evidence is available in interviews:

Can you push me over there? I want to sit there because the view is better (Taiwanese). During today's activity this senior just watched the other residents participate from the sidelines, he didn't take part himself. Care staff: "Do you want to take part with everyone else?" Senior: "I don't know how to play this." This senior can get very confused about things and be quite irascible, often getting angry and cursing people. He often argues with staff and other residents (Taiwanese) (A Zhao 2)

This senior suffers from physical decline, has no energy in his lower limbs and receives regular and ongoing physical therapy in the hope that he will learn how to operate the wheelchair himself, but he refuses to practice, (B Fu)

"I don't remember. Stop asking me, I will do it myself." This senior is very dependent on his family and he often asks them to bring him food to meet his needs. (A She)

Every time I do my rounds I ask her why she doesn't get up and walk around and she says she's old and can't move, and even if she could where would she go. (B Hu)

From our interviews with care professionals and seniors we discovered that the main complaints of seniors are: poor memory, a lack of interest in most things, poor appetite and difficulty sleeping, areas covered by questions 4, 5, 10 and 16 in the TDQ. Researchers attempted to use changes in daily schedules to reduce the opportunity and time for seniors to doze off. This involved reducing the time spent watching TV and doing nothing, increasing the opportunities to take part in activities and through such events interacting and establishing connections with other residents. This enhances the social behavior of seniors and thereby enriches the lives enjoyed by seniors in care facilities.

In addition, there was a major fall in the average value of answers to statements "10. My memory is bad" "12. It takes longer to think about or do things than in the past" and "13. I have less confidence than in the past" from the pre-activity to the post-activity TDQs.

This is a clear indication that adjusting daily schedules and introducing light exercise group activities was beneficial in terms of improving seniors' self behavior diagnosis. This not only reduces the dependence and withdrawal of seniors, it also provides resident seniors with more opportunities to interact which promotes more social behavior.

4.3.2. Changes in Emotional Symptoms

Table 9 shows answers to statements relating to emotional symptoms, including "1. I want to cry," "2. I'm in a bad mood," "9. I feel anxious," "14. I always expect the worst" and "15. I can't get over things and have suicidal thoughts." In the pre-experimental activity TDQ the scores for these statements were 1.00, 1.77, 1.31, 1.31 and 0.85 respectively. Interestingly, these scores were on average higher than either of the other two categories of statement. However, once daily schedules were adjusted and light exercise group activities introduced, the average scores for these statements in the post activity TDQs fell more than for the other two. This clearly indicates that the introduction of experimental activities eliminated the most important emotional issues. Moreover, only one senior checked "Occasionally (1-2 days a week)" for statement "15. I can't get over things and have suicidal thoughts" in the two post-activity TDQs. This indicates that in addition to a fall in the occurrence of depression among seniors, other important emotional problems were also eliminated.

4.3.3. Changes in Physical Symptoms

Table 9 shows answers to statements relating to physical symptoms, including "4. I can't sleep" "5. I have no appetite" "6. I feel a tightness in my chest" "7. I feel physically uncomfortable" "8. I feel physically tired, weak and listless" and "17. I feel physically uncomfortable (headaches, dizziness, palpitations or stomach ache)." A comparison of pre and post activity TDQs indicates that most seniors indicate physical discomfort and the average differential was small, from which we can conclude that physical ailments have a direct impact on the occurrence of depression among seniors.

This senior is very clear headed, able to express his needs and whether he feels any physical discomfort. He is also able to engage in effective two way communication with people. However, because he has little energy in his lower limbs and walks rather unsteadily he is considered to be at a high risk of falling down and he must be watched closely every day. Previously he had an operation on his right shoulder and recently complained of much discomfort in that area which has impacted his

emotional state and appetite. (A She 1).

Miss, I feel dizzy, have a headache and feel uncomfortable. People appear to be floating (Taiwanese), perhaps my blood pressure is too high (B5)

Miss, My leg has started to feel sore again (walking with the use of a walking frame and looking at his leg), can you help me get a pain medication patch? (A4)

This senior has poor dietary and life habits which have caused him to become listless and take in insufficient nutrition. We continue to encourage him to change his diet and watch closely his blood sugar level, when necessary trying to educate him on health issues, as a way of improving his physical health. (A Hu)

This senior often uses feeling physically uncomfortable as an excuse for not taking part in group activitie and the only thing he likes to do is lie on his bed and rest. As such, care staff must not only pay particular attention to his diet, but also frequently express concern to give him a sense of security and establish two-way trust. This can then be used to encourage the senior to take part in group activities, improve his level of activeness and interaction with other residents, thereby slowing down any decline in mental capacity. (A She 1)

From the above interviews we can see that seniors who live in care facilities are very much concerned about changes in their physical health, whether blood pressure, food intake, how much water they drink, and their emotional state on any given day is often easily impacted by slightly higher blood pressure or difficulties with bowel movements. Moreover, the mental state of seniors is often influenced or changed by such physiological warning signs, which in turn impacts appetite and sleep. Faced with such a vicious cycle there is a relative increase in the occurrence of depression among seniors resident in care facilities. When the activities were initially introduced many seniors refused to participate because of their physical condition, but after one-and-a-half months of daily schedule adjustment and light exercise group activities they became more willing and proactive about participation. In addition, researchers found changes not only in seniors who took part in experimental activities, but also in other seniors:

This senior was initially unwilling to take part in today's group exercise activity and watched TV instead, but later after he heard those taking part laughing, he suddenly decided he wanted to join in from about half way through. As such, he was keen to take part and happy to do so. We continue to invite him to participate in the activities as a result of which he has more chances to interact with other residents, which has enriched his life and given him a sense of belonging at the care facility.

I want to take part, why hasn't the social workers come and got me? Is it because I just went to the bathroom or are they already outside? It's not time for care staff to respond yet.

I worked out today. The nurse told me I've been had difficulty sleeping at night because I haven't been exercising and dozing off during the day. The nurse said if the doctor doesn't give me any medicine and I don't exercise I wont be able to sleep.

This senior used to take forever to eat his breakfast, so much so that it had a knock on effect on his scheduled taking of medicine in the morning. Now he takes the initiative in asking staff at the nurse's station whether his medicine is ready or not.

By the fourth month of the experimental activities, care staff were bringing participating seniors to the group activity area ahead of time and asking social workers to take care of them. However, we only found out by talking to the care staff that the seniors were nagging them about there being not enough time for the activities and insisting they bring them earlier. As a result, those seniors able to move on their own steam made their way to the venue earlier where even before the activity started they spent time chatting. In other words, the adjustment in daily schedules seems to have changed the lifestyles of these seniors.

The researchers discovered from interviews with seniors that their main complains were: "physical discomfort," "don't feel like eating," "can't sleep" and "pain." Moreover, although the post activity TDQs show a clear reduction in the occurrence of depression in seniors resident in care facilities following the introduction of experimental activities, certain symptoms continue to exist. After identifying the main symptoms based on data collected, researchers discovered that the existence of

physical discomfort has a direct impact on the occurrence of depression among seniors. In addition, some seniors are scared to take part in physical activities because of the pain they feel, so they are also not particularly active even in scheduled physical therapy sessions because the sense of discomfort caused by long-term pain becomes a psychological burden leading to a situation where the senior finds it difficult to relax and engage in too strenuous physical exercise.

This senior suffers from back pain and a lack of sensation in his feet. When asked how he feels, he said the back pain is a long term problem that flares up every now and again. He also said that the only way to reduce the pain in his back is to lie down on a bed. Although when participating in activities this senior displayed good physical ability, he continues to complain of pain throughout scheduled physical therapy. (A Fu)

In one case the senior complained that a Lumbar osteophyte operation failed to reduce the pain in his lumbar region. After evaluating this case and the post operative neuropathic pain felt by the patient the physical therapy program mainly seeks to reduce inflammation and pain in the lumbar region. It also includes infrared irradiation to promote blood flow and reduce pain in the affected area.

In the past, we have sought to deal with this senior's lack of appetite by trying to guide him in the right direction. For example, he is asked to eat and timely assistance provided when needed. Faced with poor food intake, his food is cut up into small pieces and fed to him, so that the senior gradually learns to chew and swallow, thereby increasing his ability to eat. This senior rarely interacts with others or participates in activities. On one hand these activities have given him more opportunities to interact with others, on the other they have also increased the amount he moves his limbs and his intake of food.

We also discovered from interviews with resident seniors that physical discomfort also causes irritability and emotional instability. However, residents of care facilities all suffer from two or more chronic ailments, which is to say that is commonplace for them to suffer from discomfort and the pain that accompanies such conditions. In other words, this is an unavoidable situation and if simple activities can be used to ease the physical discomfort of seniors then they can also help to shift their focus, which makes such an approach deserving of further promotion and implementation.

From the above interview data it is clear that most seniors suffering from depression require assistance in coping with daily life, which reduces their opportunities to proactively participate in activities and interact with others. Moreover, this condition is also frequently accompanied with difficulty sleeping and poor appetite, but because seniors generally do not want to impose or bother others they are unlikely to actively ask for something or seek help. With the exception of such habitual daily behavior as taking medicine and measuring blood pressure, seniors are often uninterested in the things going on around them. Add to that the displacement of time in their daily lives and the big change in their daily schedules compared to being at home and resident seniors are unlikely to consider the care facility a long-term residence never mind a home.

4.4. Reductions in the Occurrence of Senior Depression in Indoor and Outdoor Groups – A Discussion

The two groups that engaged in the experimental activities involved in this research employed identical light exercise group activities and processes. In order to examine differences in the occurrence of depression among seniors in these groups after the completion of the experimental activities, researchers tabulated the average values for the three TDQ and these are presented in Table 10. The average value in the pre activity TDQ for the outdoor group was 18.57 points and the indoor group 22.33 points. However, the average values for the two TDQ conducted after the experiment was completed were 10.57 for the outdoor group and 7.83 for the indoor group. In other words, there was a clear fall for both groups in the first post activity TDQ relative to the pre activity TDQ. A comparison of the average values for the pre activity TDQ and the second post activity TDQ shows the same situation. This indicates that regardless of whether they were held indoors or outdoors the experimental activities had a positive effect in reducing the occurrence of depression among seniors resident in care facilities.

Table 10. *Comparison of TDQs for Indoor and Outdoor Groups*

Average Value by Group	Pre Activity TDQ	First Post Activity TDQ	Second Post Activity TDQ
Outdoor Group	18.57	10.57	13.00
Indoor Group	22.33	7.83	10.50

5. Conclusion and Limitations

5.1. Conclusion

Following the adjustment of daily schedules and introduction of light exercise group activities, there was a clear reduction in the occurrence of depression among seniors resident in care facilities. The original daily schedules included fixed meal times, but most leisure time involved watching TV and there were excessively long periods of time in which residents had nothing to do, which resulted in them spending much time sleepy or dozing off. However, once the daily schedule was adjusted, seniors spent less time passive. In addition, residents were also encouraged to take part in light exercise group activities as a way of making their daily schedules more vital and energetic. Interestingly, after the completion of multiple activities, resident seniors moved from passive participation to more active involvement. Indeed, many even took the initiative in making requests during activities and responded to activity leaders and other participants.

It was discovered that the scores in the second and third TDQs taken by the 13 participating seniors after completing the activities, were lower than those for the pre-activity TDQ. At the same time, the average values for the two groups in the post activity TDQs were lower than in the first TDQ. This indicates hat an appropriate adjustment to the daily schedules of seniors living in care facilities together with the provision of suitable light exercise group activities not only provides seniors with opportunities to interact with other residents and engage in social intercourse, it also had a positive effect on reducing depression among seniors.

5.2. Limitations

In summarizing the results of this research, we would like to make a number of proposals and suggest certain limits for those who might seek to build on this work. First, this quasi-experimental research project was based on a sample of 13 seniors who were resident at two care facilities and as such should be considered exploratory in nature, which is to say there is a limit to what can be deduced from its findings, which require further verification from new research. Second, based on the different needs of seniors, senior care services have diversely developed. Future researchers can reference the methodology we have employed to conduct similar experimental research aimed at the targets of different care services. Finally, as seniors face the physical decline that comes with ageing and the need for care caused by illness that can be such an obstacle in later life, the question becomes whether when seniors lose the ability to live on their own they can still retain the right to make choices and control their lives. The answer to this question requires further research that can serve as a reference point for related agencies to continue serving seniors.

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