EFFECTIVENESS OF INDIVIDUALISED OCCUPATIONAL THERAPY BASED COGNITIVE BEHAVIOURAL TECHNIQUES ON POST STROKE DEPRESSION

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ABSTRACT:

Effectiveness of individualized occupational therapy based cognitive behavioral techniques on post stroke depression

Keywords: occupational therapy, cognitive behavioural, post stroke depression

I. INTRODUCTION

Stroke can be defined as “rapidly developing clinical signs of focal (or global) disturbance of cerebral function, having symptoms lasting for 24 hours or longer or may lead to death, with no other cause besides vascular origin (WHO, 1978). Each survivor of a CVA has a unique combination of deficits determined by the location and severity of the lesion. Besides neurological impairments like Hemiplegia, Aphasia, Dysarthria, Dysphagia, Apraxia, etc. Stroke can cause cognitive deficits, and depression, and the possible effects of it on occupational functioning due to decreased motivation; decreased social interaction. (Trombly 6th edition). Most patients show reactions to their stroke, which includes denial, anxiety, anger, and depression (Gresham et al., 1995). The most commonly reported reaction is depression, which affects 25–40% of patients within the first year after a stroke as stated by Eriksson et al., 2004. Depression continues over time and is seen as rehabilitation proceeds (Gresham et al., 1995). Depression may occur due to biochemical changes in the brain and maybe a reaction to the perceived losses. (Eriksson et al., 2004). Post-stroke depression (PSD) is thought to be the most frequent neuropsychiatric consequences of stroke & of high clinical importance. At least 1/3rd of stroke survivors display mood symptoms. The consequences of PSD are highly significant. The risk of subsequent mortality may increase due to PSD, which poses challenges to functional recovery, and levels of disability may heighten, which may negatively impact the quality of life. Stroke survivors having depression give up on physical rehabilitation programs due to apathy and hopelessness.

CBT can add value to current treatments regarding optimizing healthcare outcomes. There is a need for occupational therapists to consider the application of CBT within their traditional professional models. CBT seems to be a good option to meet the needs of people who have become depressed after a stroke. By CBT patients can better regulate their emotions, increase activity towards optimal levels of functioning, and maintain optimistic thinking. On the contrary, PSD results in poor emotion management, inactivity, and negative thinking.
etc. Reduction of depressive symptoms such as apathy, hopelessness, and low mood is the primary aim of CBT so that we can prevent excess disability, resulting in decreased levels of functioning. For these reasons, CBT for PSD may be the first choice of intervention. CBT must be designed and delivered based on individual patient needs to control PSD.

II. AIMS AND OBJECTIVES

Aim

To study the effectiveness of individualized occupational therapy based cognitive behavioral techniques on reduction of depression and subsequent QOL.

Objectives

To study the effect of individualized occupational therapy based cognitive behavioral techniques (CBT) on the reduction of depression in Stroke survivors

III. HYPOTHESIS

Null Hypothesis (H0):

Individualized occupational therapy based cognitive behavioral techniques (CBT) will not affect the reduction of depression in patients with PSD.

Alternate Hypothesis (Ha):

Individualized occupational therapy based cognitive behavioral techniques (CBT) will be effective for the reduction of depression in the patients with PSD

IV. REVIEW OF LITERATURE

Mary W Hildebrand 2015 (AJOT) conducted an evidence-based review on the effectiveness of interventions for adults with psychological or emotional impairment after stroke to evaluate the effectiveness of occupational therapy interventions to prevent or mitigate the effects of psychological or emotional impairments after stroke. 39 journal articles met the inclusion criteria. 6 types of interventions were identified that addressed depression, anxiety, -related quality of life: exercise or movement-based, behavioral therapy, and stroke education, and community-based interventions that included occupational therapy. The evidence is inconclusive for using multicomponent exercise programs to combat depression after stroke. One study provided support for an intensive multidisciplinary home program in improving depression, anxiety, and health-related quality of life. This evidence-based review provides some guidance, but more research is required to ascertain what interventions are effective for people with psychological impairments after a stroke

Hassan Izzeddin Sarsak, 2020 has proposed applied occupational therapy for major depressive disorder, which describes a comprehensive occupational therapy evaluation for a 25-year-old female with major depression and suicide attempt in an inpatient psychiatric hospital. A thorough evaluation process was conducted by an interdisciplinary team including an occupational therapist. The role of occupational therapy is emphasized in terms of functional assessment and evidence-based occupational therapy interventions for patients with depression.

Joyce A Kootker, Luciano Fasotti, Sascha MC Rasquin (2012) conducted RCT is conducted in which the effectiveness of augmented, activation-based, and individually tailored CBT on the reduction of depression and anxiety has been investigated in patients with PSDA. Additionally, the effects on various secondary outcome measures, such as quality of life, goal attainment, and societal participation have been evaluated. This study is embedded in a consortium of 4 interrelated studies on quality of life after stroke .sample of 106 PSDA patients, as assessed with the Hospital Anxiety and Depression Scale. The experimental intervention consists of an augmented CBT intervention. The intervention is based on CBT principles of recognizing, registering, and altering negative thoughts and cognitions so that mood and emotional symptoms are improved. Follow-up has been done immediately post-intervention, and at 6 and 12 months follow up.

an Waldron, Lisa Marie Casserly, and Clodagh O'Sullivan (2013) review treatment outcome on cognitive-behavioral therapy (CBT) for depression and anxiety following acquired brain injury (ABI). 24 studies were
N. Khan-Bourne1, 2 and R. G. Brown2 2003, Cognitive behavior therapy for the treatment of depression in individuals with brain injury, the links between depression and neuropsychological functioning are explored and the significant impact of depression on neurorehabilitation outcome highlights the need for the development of effective interventions in this area. Cognitive behavior therapy (CBT) is presented as a potentially suitable treatment: The model is described with ideas for the clinician on how to adapt the delivery of CBT for clients with neuropsychological impairment. To date, there have been a very small number of studies evaluating CBT for the treatment of depression in brain injury, however, their results have been promising. It is concluded that further research is necessary.

Niall M. Broomfield, Ken Laidlaw, 2 Emma Hickabottom, 3(2011) argued there is every reason to believe CBT should be an effective treatment, but that clinicians must augment and individually tailor this approach to ensure effectiveness. They set out their rationale for a novel augmented, individually tailored CBT protocol, and describe five key components: motivational interviewing, grief resolution, selection optimization compensation, cognitive adaptations, and executive skills training. They believe it is only by incorporating these components into a novel therapy protocol, and by testing this augmented treatment approach, tailored to individual patient needs, that CBT for PSD can ultimately be refined and treatment outcome enhanced.

Capaldi, V. F., II, and G. H. Wynn (2010). "Emerging strategies in the treatment of post-stroke depression and psychiatric distress in patients 2010 states PSD has been associated with poorer rehabilitative outcomes, longer inpatient stays inefficient use of medical resources, worsened cognitive decline, and increased suicidality. This study proposed the etiology of PSD as well as current and emerging evidence-based prevention, screening, and treatment modalities. The timely use of prevention and treatment techniques including pharmacologic and no pharmacologic methods may improve treatment outcomes and enhance the quality of life in stroke patients.

Eun-Song Kim,1 Ju-Wan Kim,1 Joon-Tae Kim,2 2018 done a study on the Longitudinal Impact of Depression on Quality of Life in Stroke and investigated the longitudinal impact of depression in the acute phase of the stroke on QOL 1 year after stroke. Total, 423 patients were evaluated 2 weeks after stroke, and 288 (68%) were followed 1 year later. QoL was assessed using WHOQOL-BREF at baseline and follow-up. The WHOQOL-BREF scores were significantly and persistently lower 1 year after stroke in patients with PSD at baseline compared with those without PSD at baseline independent of demographic and clinical characteristics, including stroke severity. PSD in the acute phase of stroke is an independent predictor of QOL in both the acute and chronic phases of stroke.

Matthias Berking a David Ebert a Pim Cuijpers b Stefan G. Hofmann, 2013. Emotion Regulation Skills Training Enhances the Efficacy of Inpatient Cognitive Behavioral Therapy for Major Depressive Disorder: A Randomized Controlled Trial, the study aimed to test whether integrating a systematic emotion regulation training (ERT) enhances the efficacy of routine inpatient cognitive behavioral therapy (CBT) for MDD (major depressive disorder). 432 inpatients meeting the criteria for MDD were assigned to receive either routine CBT or CBT enriched with intense emotion regulation skills training (CBT-ERT). Participants in the CBT-ERT condition demonstrated a significantly greater reduction in depression (response rates - CBT: 75.5%, CBT-ERT: 84.9%; remission rates - CBT: 51.1%, CBT-ERT: 65.1%). Moreover, CBT-ERT participants demonstrated a significantly greater reduction of negative affect, as well as a greater increase in well-being and emotion regulation skills particularly relevant for mental health. Integrating strategies that target emotion regulation skills improves the efficacy of CBT for MDD.

Tamara Rabi Žikić, Ivana Divjak, Mirjana Jovičević, Marija Semnic, Department of Neurology, University of Novi Sad, Serbia EFFECT OF POST STROKE DEPRESSION ON FUNCTIONAL OUTCOME AND QUALITY OF LIFE. Despite being a common and important complication of stroke, post-stroke depression is often overlooked, so its impact on stroke outcome remains under-recognized. The study aimed to determine the effect of depression on functional outcomes and quality of life in stroke patients. The study included 60 patients treated for their first clinical stroke, 30 of them diagnosed with depression, and 30 patients without depression.
Testing was done in all patients two and six weeks after stroke. Depression was diagnosed according to the Mini International Neuropsychiatry Interview, DSM-IV diagnostic criteria, and depression severity was quantified by the Hamilton Depression Rating Scale; functional impairment was determined by the Barthel Index, and post-stroke quality of life was assessed by the Short Form 36 (SF-36) questionnaires. The patients with depression had significantly more severe functional disability both at baseline and after rehabilitation treatment, although the potential for functional recovery in depressed patients was less than in non-depressed ones. The quality of life in patients with post-stroke depression was impaired more severely in all SF-36 domains compared with non-depressed stroke patients, with the domains of the role of emotional functioning and social relations being most severely affected.

V. METHODOLOGY

Study Location
The study was conducted in the department of occupational therapy of SVNIRTAR.

Study Design
A pre-post experimental study design was used

Sample Size
A total number of 18 subjects both male and female were recruited from the OT department of SVNIRTAR who filled the inclusion criteria and assigned into two different groups.

Sampling Technique
Convenient sampling was used.

Inclusion Criteria
- They were recruited who are clinically diagnosed with stroke (CVA)
- Post stroke survivor duration more than 3 months
- Their depression sub-score on the Beck depression inventory was 17 or above
- Age range between "30 to 50".
- Having ability to understand the verbal information (MMSE 24 -30).
- Both male and female.

Exclusion Criteria
- Patients with co-morbidity such as cancer or major psychiatric illnesses.
- Pre-morbid major depression diagnosis, or
- Having received psychiatric care for depression.
- Screening tools

MINI MENTAL STATUS EXAMINATION (Lenore kurlowicz et al, 1975)

It is a practical method used to grade cognitive status of subjects. It is a well-validated screening tool for the evaluation of cognitive dysfunction, which measures orientation to time, place, immediate recall, short-term verbal memory, calculation, language, and constructability.

Outcome measure
Beck Depression Inventory 2nd ed. (BDI-II)

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It is to identify the severity of depression present at-risk clients. It consists of 21 questions self-report questionnaire which takes approximately 5-10 minutes to administer by asking the individual to choose the response, which described their feelings most accurately in the past 2 weeks.

WHOQOL BRIEF

The WHOQOL-BREF contains a total of 26 questions and is a self-report questionnaire. It contains 26 items and addressing 4 domains of QOL: physical health (7 items), psychological health (6 items) social relationship (3 items), and environment (8 items)

VI. PROCEDURE

After approval for this study by the research ethical committee of SVNIRTAR and as per the inclusion and exclusion criteria, subjects were selected and informed consent was taken from the participants, then a sample of PSD patients, as assessed with Beck depression inventory will be recruited and allocated to either an experimental or a control group. Subjects were reassessed by using the outcome measures after 4 weeks of intervention

Group A: Experimental group
Group B: Control group

Treatment for group A: The experimental intervention consists of an occupational therapy-based CBT along with conventional OT. The intervention is based on CBT principles of recognizing, registering, and altering negative thoughts so that the mood and emotional symptoms may be influenced. The occupational therapy-based CBT program of 10 patients was conducted in 2 phases for 30 minutes a session, 5 days a week, for 4 weeks. Patients were allowed to take a break of 10 seconds. In the session, the patient will be acknowledged with activity schedules, steps of arresting ruminative thinking, and problem-solving along with sleep hygiene while continuing the conventional OT intervention.

Treatment for group B: Patients in the control group will receive conventional OT intervention.

VII. PROTOCOL

1. Problem Solving Strategies for Effective Problem Solving the SOLVED technique, the steps to most effectively identify and solve problems in your life.

S (Selecting a Problem) ask the patient to think about situations when he or she feels distressed or difficulty problem-solving.

O (Opening Your Mind to All Solutions). Writing may be particularly helpful for some patients. Even ideas that seem ridiculous at first may generate realistic solutions. Tips for generating possible solutions: • Ask the patient to think about advice he or she would give someone else with this problem. • Ask the patient to examine the ways he or she have handled similar situations. • Instruct the patient to consult with a close friend or relative for additional solutions.

L (Listing the Potential Pros and Cons of Each Potential Solution) Often, writing options, along with listing pros and cons, can help consider potential options. Writing allows additional thought, as well as a visual image of options.

V (Verifying the Best Solution) examines the pros and cons of the solutions listed. Patients may wish to “rank order” the solutions based on which solutions are most practical and/or desirable, then select the best solution.

E (Enacting the Plan) Patients may need to break actions down into steps small enough to facilitate the achievement of goals. Once you and the patient finish formulating a specific plan, encourage the patient to carry it out.

D (Deciding if the Plan Worked) Follow-up with the patient to see how well the chosen solution worked. If the solution was effective, give positive reinforcement. If the solution was not effective, return to the first step in the
SOLVED technique to specify a new problem and follow the process. (A therapist guide to CBT Jefferay A. cully, Andra L. teten)

2. Arresting ruminations

Thought-stopping

Involves teaching a client to actively clear his or her mind of verbal messages or visual images that are negative or painful (Beck and Emery 1985; Davis, Eshelman, and McKay 1988). Thought-stopping (or image-stopping) is best used as a means of coping with an acutely difficult situation. Thought-stopping is accomplished by instructing a client to say "stop," picture a barricade or stop sign in his or her mind, and/or snap a rubber band around his or her wrist when a negative thought or image comes to mind. The negative thought is then arrested by one of two techniques: Actively substituting it with a soothing or positive alternative, using distraction techniques to arrest the negative thinking. (Taylor 2006)

Work out. Aerobic exercise can exorcise those toxic thought processes. Be sure to exercise during the day or in the early morning, because exercising too near bedtime can disturb your sleep.

Leisure participation: Get up and out. Ruminations more difficult when you're outside of your home or in the company of others. If you know that you're most vulnerable to ruminating at certain hours of the day, make sure that you schedule activities for these times.

3. Activity and Exercise Scheduling

Generally, clients that have been forced to change their prior activity patterns dramatically may be vulnerable to patterns of interactivity, over activity, or imbalances in activity.

One of the best ways of starting to overcome depression is to gradually become more active, to steadily re-engage with other people, and to start tackling daily chores and other problems.

Use the activity schedule to start to plan each day with a realistic balance of activities and rest. Allocating a specific time to do a specific activity

Take it to step by step. Don't overload the activity schedule.

4. Sleep hygiene

Get regular: go to bed and get up at more or less the same time every day, Avoid caffeine & nicotine, alcohol is for sleeping Try not to use your bed for anything other than sleeping, do not use the bed as a place to watch TV, eat, read, work and other things

the right space: quiet and comfortable, regulate the temperature, noise, light, and other environmental factors that can influence sleep.

VIII. DATA ANALYSIS AND RESULT

18 subjects were randomly selected for the study with the mean age of 30 to 55. The SPSS 23 was used for analysis; the data of all subjects were being assessed by the Beck Depression Inventory and WHOQOL BRIEF.

Each assessment was followed by reassessment at the end of 4 weeks post-intervention. The data were analyzed using the Wilcoxon signed-rank test: The Wilcoxon signed-rank test is a non-parametric statistical hypothesis test used to compare two related samples, matched samples, or repeated measurements on a single sample to assess whether their population means ranks differ. It can be used as an alternative to the paired Student's t-test (also known as "t-test for matched pairs" or "t-test for dependent samples") when the distribution of the difference between two samples' means cannot be assumed to be normally distributed. A Wilcoxon signed-rank test is a nonparametric test that can be used to determine whether two dependent samples were selected from populations having the same distribution test that has been used to analyze.

The data were analyzed using paired t-test to know if there is a significant difference between the means of pre and post-data within the groups. Mann-Whitney U test was used to analyze whether there are significant differences between the two groups

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Table 1: Descriptive Statistics

<table>
<thead>
<tr>
<th>N (Total Number of subjects)</th>
<th>Age</th>
<th>Sex</th>
<th>Marital status</th>
<th>Duration of illness (in months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>42.60± 9.38 (Mean ± SD)</td>
<td>12:6 (Male : Female)</td>
<td>17:1 (Married : Single)</td>
<td>6.61± 2.34 (Mean ± SD)</td>
</tr>
</tbody>
</table>

Table 1 presents the descriptive statistics of the demographic data. The mean age of the subjects was 42.6. There were 12 male and 6 female subjects who participated in the study. The mean duration of illness was 6.61 months.

Table 2 Descriptive statistics of beck depression inventory.

<table>
<thead>
<tr>
<th>Outcome measure</th>
<th>EXPERIMENTAL GROUP</th>
<th>CONTROL GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean test score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Std.Dev</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean test score</td>
<td></td>
<td></td>
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<tr>
<td>Std.Dev</td>
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</tbody>
</table>

Pre test
Post test
Pre test
Post test
Pre test
Post test

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Table 3 compiles the mean and standard deviation of BDI of both the experimental and control groups. Graph 1 depicts the comparison of the mean of BDI score of both groups. It can be inferred from the graph that BDI has shown statistically significant improvements in post data when compared to pre-data which was proven using both groups T-test (Sig: 0.041). When the difference in mean scores of both groups was compared using Mann Whitney U Test, it showed that the experimental group showed significantly more improvement when compared to the control group (P:0.00, ). The graph also depicts the same.

Table 3: Mean and SD of WHOQOL domain scores

<table>
<thead>
<tr>
<th>WHO-QOL</th>
<th>EXPERIMENTAL GROUP</th>
<th>CONTROL GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean test score</td>
<td>Std.Dev</td>
<td></td>
</tr>
<tr>
<td>Mean test score</td>
<td>Std.Dev</td>
<td></td>
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<tr>
<td>Domain 1 (Physical health)</td>
<td>Pre test</td>
<td>Post test</td>
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<tr>
<td>---------------------------</td>
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<td>-----------</td>
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<tr>
<td>Domain 2 (Psychological health)</td>
<td>29.33</td>
<td>52.11</td>
</tr>
<tr>
<td></td>
<td>31.33</td>
<td>50.77</td>
</tr>
</tbody>
</table>
9.66

Domain 3
(Social Relationship)
40.33
64.66
12.13
11.23
38.88
43.66
17.87
15.98

Domain 4
(Environment)
50.77
70.33
6.55
5.83
46.66
50.11
13.07
12.91

Table 4: Comparison of difference of pre and post transferred score of WHOQOL Domains and Mann Whitney U Test

<table>
<thead>
<tr>
<th>WHOQOL GROUPS</th>
<th>MEAN</th>
<th>SD</th>
<th>Z VALUE</th>
<th>SIGNIFICANCE</th>
</tr>
</thead>
</table>

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<table>
<thead>
<tr>
<th>Domain</th>
<th>Experimental</th>
<th>Control</th>
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<tbody>
<tr>
<td>1</td>
<td>52.11</td>
<td>10.11</td>
</tr>
<tr>
<td></td>
<td>6.21</td>
<td>7.02</td>
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<tr>
<td></td>
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<tr>
<td></td>
<td>0.011</td>
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<tr>
<td>2</td>
<td>50.77</td>
<td>13.88</td>
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<tr>
<td></td>
<td>7.80</td>
<td>10.51</td>
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<tr>
<td></td>
<td>-1.990</td>
<td></td>
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<tr>
<td></td>
<td>0.046</td>
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<tr>
<td>3</td>
<td>64.66</td>
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<tr>
<td></td>
<td>11.23</td>
<td></td>
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<tr>
<td></td>
<td>-3.518</td>
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<tr>
<td></td>
<td>0.00</td>
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</tbody>
</table>
Table 4 shows the results of Mann Whitney U Test of difference of pre and post transferred score of WHOQOL domains of both groups. The experimental group has shown good difference in all domains and it has been statistically proven that Domain 1 (Sig: 0.01), Domain 2 (0.046), Domain 3 (Sig: 0.00) and Domain 4 (Sig: 0.00) are statistically significant.

IX. DISCUSSION

Currently, very few studies have been conducted that have evaluated the effectiveness of an occupational therapy-based CBT intervention on post-stroke depression, and QOL.

Reduction of PSD could positively influence psychosocial functioning, rehabilitation outcome and concurrently improve different domains of QOL. The current study aimed to study the effect of individualized occupational therapy-based cognitive-behavioral techniques (CBT) on the reduction of depression, additionally the effects on secondary outcome measures, such as QOL for 4 weeks in stroke survivors.

The results of this study indicate that individualized occupational therapy-based cognitive-behavioral techniques (CBT) on the reduction of depression is more effective than conventional therapy alone. Joyce A Kootker et al. in their study6, proposed intervention based on CBT principles, shown mood and emotional symptoms are improved. One aspect of the current study is that the CBT intervention takes into account recommendations by Broomfield and colleagues for the design of a post-stroke CBT intervention.
G. Hofmann, 2013. Done study on CBT for Major Depressive Disorder demonstrated a significantly greater reduction in depression, negative affect, as well as a greater increase in well-being and emotion regulation skills particularly relevant for mental health.

Tamara Rabi studied the effect of PSD on QOL. The quality of life in patients with post-stroke depression was impaired more severely in all SF-36 domains compared with non-depressed stroke patients, with the domains of the role of emotional functioning and social relations being most severely affected.

The effect of individualized occupational therapy-based cognitive-behavioral techniques (CBT) on QOL has also been studied, the results indicate that QOL does improve when using the techniques. QOL is also based on personal attitude, reactions of others and value system as the patient gets more insight into his or her behavior these opportunities create positive re-enforcements for further human interaction.

This has opened a completely new avenue to be explored so that it can be an effective addition to the stroke population.

X. CONCLUSION

The study “individualized occupational therapy based cognitive-behavioral techniques (CBT)” showed occupational therapy based cognitive-behavioral techniques (CBT) have a positive effect on PSD and improving QOL. As depression is a neglected part after stroke in the therapeutic intervention process so, according to this study occupational therapy-based cognitive-behavioral techniques can be incorporated for treatment of depression after stroke.

As the depression is reduced QOL will be improved in post-stroke survivors which will ultimately influence the rehabilitation outcome

XI. LIMITATION AND FURTHER STUDY

Limitations

Although the research has reached its aim, there were some unavoidable limitations. They are as follows:-

- Because of the time limit, due to COVID 19 pandemic 2020. This research was conducted only on a small sample size of population who attended the set up.
- The literal translation of the questionnaire, may not have conveyed the exact meaning.
- And sample collection was confined to small geographical area
- Gender distribution could not achieved because of small sample size and convenient sampling
- There was no strict monitoring of home protocol.

Further Recommendation

- Sample size should be larger for generalization of the study.
- Randomization should be done to improve the reliability of the study.
- To know the long term effectiveness follow up should be incorporated which was a limitation of this study due to COVID 19 pandemic.

Thus, further studies of CBT based occupational therapy for the enhancement of post stroke depression, and improving QOL are required.

REFERENCES


