

# Appraise State of Art to Improve the Effectiveness and Efficiency of Rehabilitation and its Outcomes among Stroke Survivors

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## ABSTRACT

**Introduction:** Stroke is the common cause of death and leading cause of adult disability. Functional abilities may improve by comprehensive rehabilitation program in acute phase of stroke. Reintegrate the survivor in the community is very important. But effectiveness of rehabilitation program and intervention are limited. The aim of the study is to appraise the state of art to improve the effectiveness and efficiency of stroke rehabilitation among stroke survivor.

**Methods:** A descriptive literature review was conducted from online databases using key words stroke rehabilitation, stroke survivors, post stroke, physical rehabilitation. A total 25 were searched using search databases of PubMed, CHINAL, Google Scholar, ProQuest, and Nepjol by December, 2022.

**Results:** After extensive literature search, existing evidence based practices related to effective ness and efficient rehabilitation for stroke survivors are classified into five main types. They are 1) technology based post-stroke rehabilitation, 2) physical exercise based rehabilitation, 3) cognitive rehabilitation, 4) educational rehabilitation, and 5) complementary and alternative therapies specially yoga.

**Conclusions:** Technology based therapies are the first choice for physical rehabilitation among stroke patients. But those therapies are more not feasible everywhere because of more expensive and need special equipment and well managed setting for practice. In contrast, yoga has been used extensively with given more priorities in physical as well as holistic health outcomes. Yoga is more cost effective, safe, can practice in any setting.

**Keywords:** Evidence based practice, state of arts, stroke rehabilitation, stroke survivors.

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## INTRODUCTION

Stroke is the second leading cause of death worldwide and the main cause of long-term neurological disability in adults.<sup>1</sup> Hypertension, cigarette smoking, alcohol consumption, and diabetes are the main predisposing factors for stroke.<sup>2</sup> According to the latest World Health Organization data published in 2020, stroke deaths in Nepal reached 8.04% of total deaths and it is a fourth leading cause of deaths.<sup>3</sup> Most of the patient suffering from stroke seeks traditional healers to treat their

conditions. Rehabilitation programme is more important to manage of these problems rather than traditional healers. More governmental and non-governmental organizations should be included in improving facilities and implementing prevention strategies. Health care infrastructure planning and policy making are important for the management of burden of future stroke. Rehabilitation for stroke survivors depends heavily on physiotherapies, complementary and alternative therapies, occupational therapies, and speech therapies.

These rehabilitation programs are essential for stroke survivors as they aid in functional recovery and maintenance health and wellbeing.<sup>4</sup>

The main goals of rehabilitation are firstly, maximizing the functional ability, secondly, minimizing the complications and disabilities in addition to prevent further deterioration and maintenance of health condition, finally, preparation to the patients for early recovery.<sup>5</sup> So, stroke patients can return to participation in usual self-care and daily activities as independently as feasible. However, in reality, due to the various aspect health and functional impact of stroke as well as varying trajectories of recovery periods of its impact, the time, patterns and intensity of rehabilitation needs are changed over time across the care continuum and vary in each individual. This phenomenon may lead to complexity of the rehabilitation to the stroke survivors. Therefore, current evidence based practices need to be employed to improve the effectiveness and efficiency of rehabilitation for people with stroke. The study aims to explore current evidence based practice / appraise the state of art to improve the effectiveness and efficiency of stroke rehabilitation among stroke survivor.

## METHODS

A descriptive literature review was conducted to find out the current evidence using key words: stroke rehabilitation, stroke survivors, post stroke, physical rehabilitation, and complimentary therapies. Evidence based practice related literature were searched available in ProQuest, CINAHL, PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Google Scholar, and NepJol databases by June 20, 2022 to identify studies on stroke rehabilitative with efficient and effective rehabilitation among stroke survivors as the primary outcome. Study design, data extraction and intervention components was limited to studies of adult stroke survivors. A total twenty-six relevant

articles were selected adopting guidelines of Ferrari (2015) for narrative review.<sup>39</sup>

## RESULTS

### Efficiency and Effectiveness of Rehabilitation Program for Stroke Survivors

Now days, a number of evidence based practices or rehabilitation interventions are extensively trailed and demonstrated the efficiency and efficacy of practice having common goal to improve the health condition of stroke patients. <sup>6</sup> Currently, available evidence based practices are categorized into 5 main types and presented as following based on their effectiveness and efficiency among stroke survivors.

#### 1. Technology based stroke rehabilitation program

It means the systematic application of technologies, engineering methodologies, or scientific principles to meet the needs of, and address the problems of person with stroke disabilities for rehabilitation. Stroke is one of the leading causes of disabilities worldwide. According to Paolucci<sup>7</sup>conventional rehabilitation program usually allows around 50% of stroke recovery in physical function like activities of daily living and independent. With this regard, currently, a number of new technologybased rehabilitation program trialed and innovated to improve the efficacy of stroke rehabilitation. For instance, some of them are 1) robotic assisted, 2) visual reality system, exoskeletal, videogame, DVD, 3) tele-stroke rehabilitation like video call, video conferences, telemetry and telephone call, 4) functional electrical stimulation 4) brain machine interferences 5) electroencephalography 6) biofeedback, 7) treadmill exercise and 8) music glove therapy.<sup>8-18</sup>

#### 2. Physical exercise based rehabilitation program

Physical exercise is any bodily activity that may

enhance or maintains physical fitness and overall health and wellness of an individual well and ill. Physical inactivity after stroke is highly prevalent.<sup>19</sup> Therefore; the physical exercises are an important means of physical rehabilitation for stroke patients. It has given more valued by the stroke patients.<sup>20</sup> Hence, it is well known and well accepted stroke state of art. Current evidence of physical therapies are effective in physical function such as ADLs, physical fitness, gait balance, mobility, as well as prevention of secondary complication of stroke but they did not focus on overall health condition of stroke patients such as holistic health. In addition, patients are felt fatigue and tired which may overwhelm the ambition of active independent participation in rehabilitation. The researcher community has extensively trailed conventional physical therapies physical therapies like a technology based program in recent research. Various approaches to physical rehabilitation are said after stroke aiming to improve the physical function and activities of daily living. Those innovations are aerobic exercise, strength and balancing exercise training, walking and mobility exercise, task oriented exercise, ADLs focus exercise.<sup>21,22,15,16,17</sup>

### 3. Cognitive rehabilitation program

Only one systematic study has been found related to cognitive therapies aiming with improvement in attention deficit, spatial neglect and motor apraxia.<sup>23</sup>The improvement has achieved in selected area except ADLs immediate after therapies without significant level in addition to long term effect has been seen.

### 4. Educational rehabilitation

Education is the power or fuel for rehabilitation program, which was extensively trialed as an independent rehabilitation therapy for stroke patients in last decade. Currently, very few RCT has been dome in this area. However, educating patients and caregivers on their stroke and components of rehabilitation

and recovery process may enable them to become taking central role in rehabilitation through enhancing motivation, engagement and decision making during rehabilitation process.<sup>24</sup> The recent studies of education focus not only patients but also family caregivers by using time in it right framework.<sup>25</sup> Secondly the education program was guided by technology like computer along with written like booklet and verbal enforcement.<sup>26</sup> lastly, skill oriented educational program such as self-care skill training.<sup>27</sup>

### 5. Complementary and Alternative Medicine (CAM).

Researches in the area of CAM are becoming a popular and flourishing in recent year in developed countries. This is may be given priorities by the WHO by making global policies related to CAM. For instance, in 2002, and 2013, WHO has updated the strategies policies as “TM strategies 2014-2023 from first strategies 200-2005”; second and third 2004-2007; 2008-2013 with the announcement of every countries should integrate the TM/ CAM within national health care system where feasible by developing and implementing national TC/CAM policies and program as well as support in education and research related to CAM.<sup>28</sup>

Currently, the CAM is extensively examined for stroke rehabilitation in the literature and got promising beneficial effects. The best time for gaining maximum effectiveness oad efficiency of whereas patients in acute phase within 3 weeks of onset of disease was the best time for getting maximum effectiveness of the rehabilitation program . Some example of commonly used CAMs for stroke rehabilitation are Tai Chi, acupressure and acupressure, Thai massage, progressive relaxation, music therapy, herbal medicine, Ayurveda and yoga. However, yoga has been found highly positive significant effect to stroke survivor' rehabilitation in relation on physical health and holistic health among all entire CAMs.<sup>29-38</sup>

## CONCLUSIONS

Current appraisal state of art or evidence based practices are shifting toward technology based post stroke rehabilitation as well as CAM practices specially yoga which were extensively examined among stroke survivor. Education and physical therapies based rehabilitation are used in integration with other therapies like tele-health program. Technology based therapies has given more focus on physical rehabilitation and more expensive and need special equipment and setting for practice. Whereas yoga has also given more priorities in physical as well as holistic health outcomes but yoga is more cost effective, safe, can practice in any setting compared to technology based rehabilitation. Similarly, acute phase within 3 weeks of disease onset is the best time for getting maximum effectiveness and efficiency of rehabilitation intervention among stroke survivors.

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