A Field Work Investigation Report

On

Occupational therapy interventions in managing post-stroke fatigue

By

S M Mahfuz Haider

February 2022, held in March 2023

This project work is submitted in total fulfillment of the requirement for the subject Field Work Investigation & partial fulfillment of the requirement for the degree of

Bachelor of Science in Occupational Therapy

Bangladesh Health Professions Institute (BHPI)

Faculty of Medicine,

University of Dhaka

Field work investigation completed by:

S M Mahfuz Haider
4th year, B.Sc. in Occupational Therapy
Department of Occupational Therapy
BHPI, CRP, Savar, Dhaka-1343.

_____
Signature

Supervisor's name and signature:

SK. Moniruzzaman
Associate Professor
Head of the department
Department of Occupational Therapy
BHPI, CRP, Savar, Dhaka-1343.

_____
Signature

Head of department's name and signature:

SK. Moniruzzaman
Associate Professor
Head of the department
Department of Occupational Therapy
BHPI, CRP, Savar, Dhaka-1343.

_____
Signature

Title

A field work investigation report

on

occupational therapy interventions

in managing post-stroke fatigue

Statement of authorship

Except where it is made in the text of the fieldwork investigation report, this fieldwork investigation report contains no material published elsewhere or extracted in whole or in part from a publication presented by me for any other degree or seminar. No other person's work has been used without due acknowledgment in the main text of the fieldwork investigation report. This fieldwork investigation report has not been submitted for the award of any other degree in any other tertiary institution. In case of dissemination of the findings of the fieldwork investigation report for future publication, the research supervisor will be highly concerned, and it will be duly acknowledged that it has been done for the partial fulfillment of the Bachelor of Science in Occupational Therapy degree.

S M Mahfuz Haider

4th year, B.Sc. in Occupational Therapy

Bangladesh Health Professions Institute (BHPI)

Centre for the Rehabilitation of the Paralysed (CRP)

Chapain, Savar, Dhaka: 1343

_____

Signature

Dedication

Dedicated to my honorable and beloved parents, my respected all teachers of Bangladesh Health Professions Institute.

Acknowledgement

Firstly, I would like to thank to the Almighty Allah for giving me the ability to complete this work appropriately. Then, I would like to thank my parents for their constant love, support, and inspiration.

I would like to thank my honorable supervisor and the head of the Occupational Therapy Department, SK. Moniruzzaman for giving me the permission to conduct this fieldwork investigation and provides proper support in every stage to finish the study.

I also like to thank Md. Tauhidul Islam and other staffs of Neuro Out-patient Unit for support and help me in every stage to complete my study.

Table of Contents

Contents Page no

Title i

Statement of authorship ii

Dedication iii

Acknowledgement iv

List of Tables vii

List of Figures viii

List of Abbreviations ix

Abstract x

CHAPTER I: Introduction 1

1.1 Introduction 1

1.2 Justification of the Investigation 2

CHAPTER II: Methods 3

2.1 Investigation questions 3

2.2 Aim and objectives 3

2.2.1 Aim of the investigation 3

2.2.2 Objectives of the investigation 3

2.3 Inclusion and exclusion criteria of the literatures 3

2.3.1 Inclusion criteria: 3

2.3.2 Exclusion Criteria: 4

2.4 Literature search strategy and selection 4

2.4.1 Literature search strategy 4

2.4.2 Literature selection process 4

2.4.3 Keywords of the investigation 4

2.4.4 Flowchart of the study selection process 5

2.5 Data analysis process 6

2.6 Reporting 6

CHAPTER III: Results 7

3.1 Findings from literature review 7
3.1.1 Literature matrix 7
3.1.2 Literature Review 14
3.2 Findings from clinical placement 19
CHAPTER IV: Discussion 24
4.1 Discussion 24
4.2 Strengths and limitations of the investigation 25
4.2.1 Strengths 25
4.2.2 Limitations 26
CHAPTER V: Conclusion 27
List of References 27
Appendix 27

List of Tables

Table 1: Literature Matrix……...…..……. page 7

Table 2: Findings of interventions to manage PSF……page 21

List of Figures

Figure 1: Flowchart of the study selection process.…… page 5

List of Abbreviations

BHPI	Bangladesh Health Professions Institute
CRP	Centre for the rehabilitation of Paralyzed
CVA	Cerebrovascular accident
FSS	Fatigue Severity Scale
OT	Occupation Therapist
PSF	Post-Stroke Fatigue
WHO	World Health Organization

Abstract

Introduction: Patients recovering from stroke frequently experiencing post-stroke fatigue, which they characterize as disabling. However, find out the effective way to diagnose post-stroke fatigue and determine the best interventions for it remains a significant challenge.

Aim: The aim of the study is to synthesis the evidence regarding the post stroke fatigue management and associated occupational therapy interventions and interpret the evidence considering the current practice at neuro out-patient unit.

Methods: A qualitative content analysis has been used. Searches of Google Scholar and PubMed were conducted using preset keywords. The overall report and findings were prepared on the basis of literature review-based analysis.

Results: Fieldwork investigation was conducted in the neuro outpatient unit, CRP for 5 weeks. According to the study selection criteria, only 10 articles were chosen for the final review. Studies mostly used the fatigue severity scale to measure post-stroke fatigue. Managing associated factors of fatigue, graded exercise, resistance exercise, energy conservation techniques, grading activity training, practice, fatigue education are the common interventions which are founded both in the literatures and neuro out-patient unit, CRP, savar.

Conclusion: The findings of this review provide a small range of evidence of the current context of occupational therapy interventions in managing fatigue for stroke patients in the neuro out-patient unit, CRP, savar. Evidence for occupational therapy interventions targeting post-stroke fatigue is limited.

Keywords: "Occupational therapy intervention", "Post stroke fatigue", "management of fatigue".

CHAPTER I: Introduction

1.1 Introduction

A cerebrovascular accident (CVA), or stroke, is a collective term for failures in blood supply to the brain, which may lead to disruption in brain function (Aarnes et al., 2019). A subjective lack of physical or mental energy or both that is perceived by the individual to interfere with usual or desired activities (Cumming et al., 2016). Subjective lack of physical and/or mental energy that is perceived by the individual or caregiver to interfere with usual and desired activities. A feeling of early exhaustion developing during mental activity, with weariness, lack of energy, and aversion to effort. Sense of exhaustion, lack of perceived energy or tiredness, distinct from sadness or weakness (Hinkle et al., 2017).

Fatigue is a common and often debilitating sequela of both ischemic and hemorrhagic stroke. Globally, there are ≈33 million stroke survivors and at least half of these individuals experience fatigue (Hinkle et al., 2017). In large studies across the first two years following stroke, fatigue is reported by more than 50% of stroke survivors. Even in cohorts of people with mild stroke and little disability, the majority report fatigue (Cumming et al., 2016).

As PSF is generally a subjective feeling, it may coexist with mental or physical symptoms and various impairments after stroke. There is, however, no consensus among clinicians or researchers on one definition of PSF, and none of the current definitions of fatigue are specific to stroke. Nevertheless, PSF has a reported frequency ranging from 35% to 92%. These rates exceed fatigue levels in the general population that range from 10% to 23%. The great variance in fatigue prevalence rates are likely

to reflect the lack of consensus on how fatigue is defined, characterized and measured, as well as heterogeneity in study designs (Aarnes et al., 2019).

Although there is no golden standard on how to measure fatigue, there appears to be a growing interest in research concerned with fatigue in neurological diseases, and many possible associated factors and underlying mechanisms have been suggested, including biological, psychological, social support, physical function, and cognition. Indeed, increasing the knowledge about PSF is important as it may interfere with rehabilitation, return to work and daily activities, and compromise independence. In addition to being reported by patients as either the worst or one of the worst consequences of stroke, PSF is also associated with increased mortality (Aarnes et al., 2019).

1.2 Justification of the Investigation

Manage post-stroke fatigue helps to increase patient's functional recovery. Due to which relatively less therapy sessions are required on the clinical side. And because fewer sessions are required, it costs less for patients. PSF is an important issue of individual stroke survivor, that's why investigator felt very much interested in this area. An occupational therapist's aim is to enable people to participate in the activities of everyday life and improve their quality of life. So, managing fatigue of stroke patient may become a new area for occupational therapists to work on.

To date, very few OTs have investigated on fatigue of stroke patients. And in Bangladesh, this kind of investigation or research has not been done yet. In future information and ideas from this investigation could be helpful for the researchers or fieldwork investigators who are keen to do studies on this area.

CHAPTER II: Methods

2.1 Investigation questions

"What are the occupational therapy interventions in managing post-stroke fatigue in Bangladesh?"

2.2 Aim and objectives

2.2.1 Aim of the investigation

- To synthesis the evidence regarding the post stroke fatigue management and associated occupational therapy intervention and interpret the evidence considering the current practice at occupational therapy outpatient unit.

2.2.2 Objectives of the investigation

1. To find out published evidence-based studies of interventions to manage fatigue after stroke.
2. To find out occupational therapy related interventions in managing fatigue of post stroke patients.
3. To interpret these findings into the current practice in Bangladesh.

2.3 Inclusion and exclusion criteria of the literatures

2.3.1 Inclusion criteria:

- ✓ Studies that were published between 2012-2023
- ✓ Studies that published in English
- ✓ Full-text articles available through Google Scholar, PubMed

- ✓ Studies evaluate the introduction of occupation therapy intervention of management of post-stroke patients
- ✓ Peer review journal

2.3.2 Exclusion Criteria:

- ✓ Duplicate in both database
- ✓ Journal that is not accessible online
- ✓ Research articles that were published before 2012
- ✓ Gray literature.
- ✓ Not peer-review papers

2.4 Literature search strategy and selection

2.4.1 Literature search strategy

The student investigator searched the literature on different databases such as- Google Scholar, PubMed. The keywords were- Occupational therapy, intervention, stroke, fatigue.

2.4.2 Literature selection process

The student investigator performed a systematic search of peer-reviewed articles published in English between 2012 to 2022. An initial search found 202 articles, after applying the inclusion and exclusion criteria.

2.4.3 Keywords of the investigation

“Occupational therapy intervention”, “Post stroke fatigue”, “management of fatigue”.

2.4.4 Flowchart of the study selection process

The investigator performed a systematic search of peer-reviewed articles published in English between 2012 to 2022. An initial search found 202 articles, after applying the inclusion and exclusion criteria.

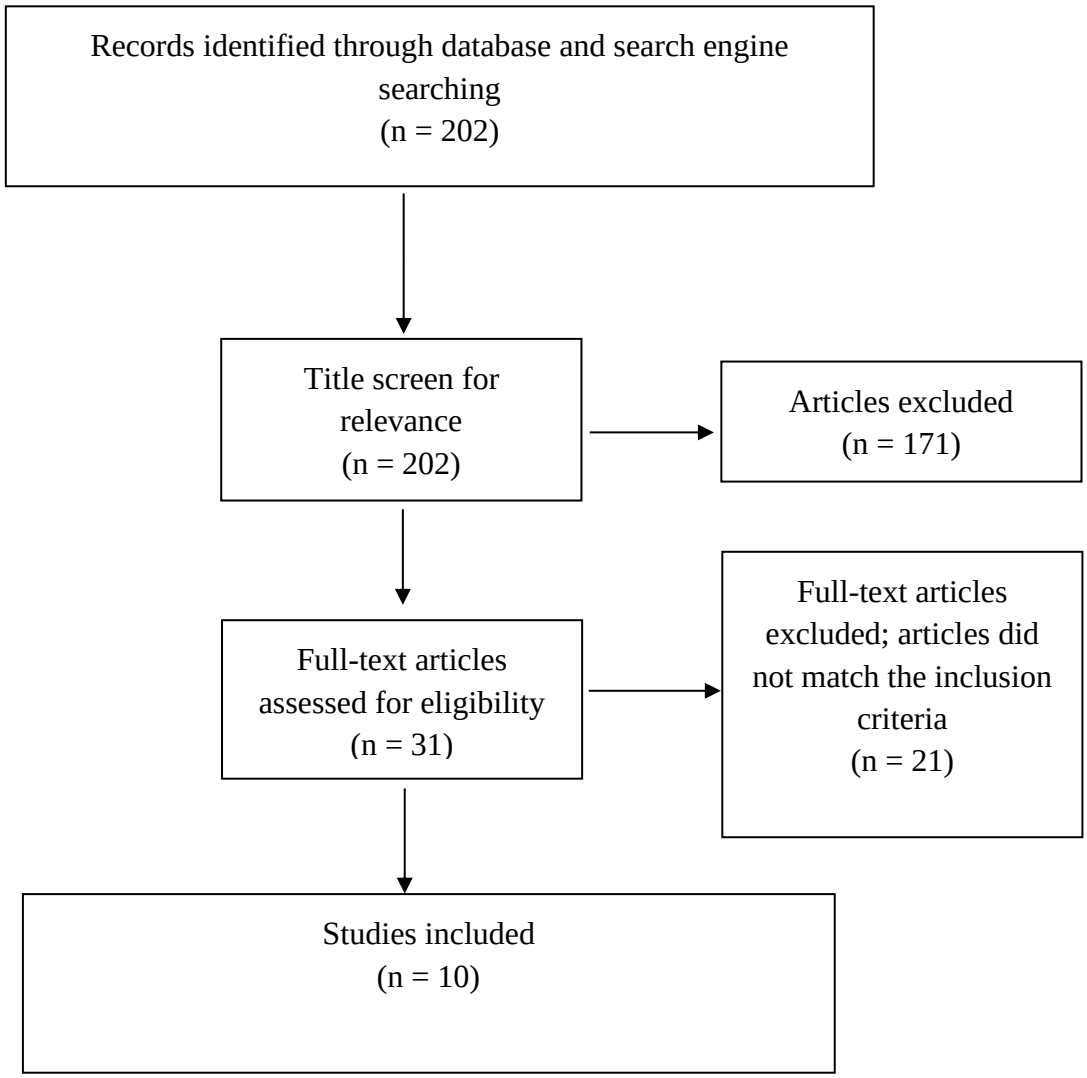

Figure 1: Flowchart of the study selection process

2.5 Data analysis process

After data extraction, the final step of methodology was the data analysis. For this study, 10 literatures were selected for review by the fieldwork investigator. Authors, publication year, journal name, search engine, purpose of the study, methodology, findings, and study gap were all included in the data charting form or literature matrix that the investigator prepared. In the matrix, the most significant key findings from the literature were noted. The investigator used a qualitative content analysis method in order to synthesis the articles related to post-stroke fatigue management and interventions used by Occupational therapists.

2.6 Reporting

The findings of the literatures will be presented in the third chapter.

CHAPTER III: Results

3.1 Findings from literature review

3.1.1 Literature matrix

Table 1: Literature matrix

Aim	Methods	Results
1. Aarnes, R., Stubberud, J., & Lerdal, A. (2019). A literature review of factors associated with fatigue after stroke and a proposal for a framework for clinical utility. *Neuropsychological rehabilitation*, *30*(8), 1449-1476. https://doi.org/10.1080/09602011.2019.1589530		
To identify studies examining associations between PSF and at least one factor, with the objective of identifying factors that should be investigated in patients with PSF.	• Research design: A literature review. • Studies, with ≥10 patients included, had to include adult subjects with stroke (>18 years old).	Overall, 281 papers were identified of which 34 were included in the final review. Demographics (gender, age), emotional health (depression, anxiety, coping strategy, and locus of control), clinical factors (sleep, pain, stroke characteristics, biological and immunological factors), social factors (social support, disabilities and functionality in daily life) and cognitive functions were found to be associated with PSF. A new framework is discussed, incorporating modifiability of PSF-related factors to heighten the clinical utility.
2. Cumming, T. B., Packer, M., Kramer, S. F., & English, C. (2016). The prevalence of fatigue after stroke: A systematic review and meta-analysis. *International Journal of Stroke*, *11*(9), 968-977. https://doi.org/10.1177/1747493016669861		
To estimate post-stroke fatigue prevalence and to identify the contributing factors to fatigue, by conducting a	• Research design: Comprehensive literature review • Overall yield of 921 studies, 101 full text papers were screened,	• Total 49 studies met inclusion criteria where most widely used measure of fatigue was the Fatigue Severity Scale (n = 24 studies). • In random effects meta-analysis, the pooled prevalence

systematic review and meta-analysis.	and 49 of these met inclusion criteria. • A total of 24 studies contained FSS data, including one that employed the 11-item version and one that administered the full Fatigue Assessment Instrument, of which the FSS is a part.	estimate was 50% (95% CI 43–57%), with substantial heterogeneity (I2 ¼ 94%). Neither depression status nor time point post-stroke explained the heterogeneity between studies. In posthoc analysis, fatigue prevalence was found to be lower in the four Asian studies (35%; 95% CI 20–50; I2 ¼ 96%)
3. Hinkle, J. L., Becker, K. J., Kim, J. S., Choi-Kwon, S., Saban, K. L., McNair, N., & Mead, G. E. (2017). Poststroke fatigue: emerging evidence and approaches to management: a scientific statement for healthcare professionals from the american heart association. *Stroke*, *48*(9), e159-e170. https://doi.org/10.1161/STR.0000000000000132		
Evidence for pharmacological and non-pharmacological interventions for management are reviewed, as well as the effects of post-stroke fatigue on both stroke survivors and caregivers.	• A critical analysis of published quantitative research and guidelines on fatigue after stroke was conducted. • Search terms included post stroke fatigue, fatigue, chronic fatigue, incidence, prevalence, caregiver, biomarker, etiology, intervention, patient education materials, and pharmacological interventions.	In this critical review of quantitative research concerning PSF, the overall quality of the research was found to be poor. Few RCTs were identified, and many studies had sample sizes of ≈40 or less.
4. Smetheram, T., Amiama, M. E., Hébert, D., Law, G., & Dawson, D. R. (2022). Occupational therapy interventions for poststroke fatigue: a scoping review. *OTJR: Occupation, Participation and Health*. https://doi.org/10.1177/153944922210879		
To identify and describe the research on potential occupational therapy	• Three databases were searched using scoping review methodology. • Two authors completed a title and abstract and	• Studies were conducted with stroke and traumatic brain injury patients in outpatient, inpatient, and community settings. Interventions included

interventions for post stroke fatigue.	full-text review. Study characteristics, participant characteristics, qualities of interventions, and outcome measures were extracted and synthesized.	psychoeducation and behavior change, multicomponent programs, and mindfulness-based stress reduction therapies. • The Fatigue Severity Scale and the Mental Fatigue Scale were commonly used.
5. Wu S., K., M.A., Chun, H.Y.Y., Cowey, E., Pollock, A., Macleod, M.R., Dennis, M., Keane, E., Sharpe, M., and Mead, G.E. (2015). Interventions for post-stroke fatigue. *Cochrane Database of Systematic Reviews* (7). https://doi.org/10.1002/14651858.CD007030.pub3		
To determine whether, among people with stroke, any intervention reduces the proportion of people with fatigue, fatigue severity, or both; and to determine the effect of intervention on health-related quality of life, disability, dependency and death, and whether such intervention is cost effective.	• This included adults (aged 18 years and over), men and women, with a clinical diagnosis of stroke. • Moreover, this included all pathological subtypes of stroke, including ischaemic stroke, haemorrhagic stroke and subarachnoid haemorrhage (SAH). And also included any method of diagnosis or assessment of PSF, but it was not necessary for participants to have fatigue at recruitment.	Of the eight trials primarily intended to treat PSF, four trials investigated pharmacological interventions and the other four investigated non-pharmacological interventions (Fatigue Group Education therapy, Mindfulness-based stress reduction therapy, Cognitive behavioural therapy, electro acupuncture). Meta-analysis indicated a statistically significant benefit of these interventions on treating PSF.
6. Kim, S., Xu, Y., Dore, K., Gewurtz, R., Larivière, N., & Letts, L. (2022). Fatigue self-management led by occupational therapists and/or physiotherapists for chronic conditions: A systematic review and meta-analysis. *Chronic illness*, *18*(3), 441-457. https://doi.org/10.1177/17423953211039783		
To investigate the effectiveness of occupational-therapist/physiotherapist-guided fatigue self-management	• Randomised controlled trials and quasi-experimental studies of self-management interventions specifically developed or delivered by	• 38 studies were included, and fatigue self-management approaches led by occupational therapists/physiotherapists were divided into six categories based on the intervention focus: exercise, energy conservation,

for individuals with chronic conditions.	occupational therapists/ physiotherapists to improve fatigue symptoms of individuals with chronic conditions were included. • A narrative synthesis and meta-analysis were conducted to determine the effectiveness of fatigue self-management.	multimodal programmes, activity pacing, cognitive-behavioural therapy, and comprehensive fatigue management. • While all exercise programmes reported significant improvement in fatigue, other categories showed both significant improvement and no improvement in fatigue.
7. Ablewhite, J., Nouri, F., Whisker, A., Thomas, S., Jones, F., Nair, R. d., Condon, L., Jones, A., Sprigg, N., & Drummond, A. (2022). How do stroke survivors and their caregivers manage post-stroke fatigue? A qualitative study. *Clinical Rehabilitation*, *36*(10), 1400-1410. https://doi.org/10.1177/02692155221107738		
The primary objective was to gain insight into the lived experiences of using day-to-day strategies to manage post-stroke fatigue	• Research design: Qualitative, descriptive study. • Research approach: framework approach. • Ethical clearance: Yes • Number of sample/ participants: 20 stroke survivors and 8 caregivers. • Age: Adult (Over 18 years) • Gender: Male & female • Types of sampling: Purposive sampling. • Data collection tool: Semi-structured interviews.	Most participants had found their own ways of coping and their personal strategies included acceptance of having fatigue; 'pacing'; keeping a diary in order to plan activities and to identify 'trigger' activities which induced fatigue; talking to (and educating) others about having fatigue; using relaxation; and accessing professional advice and support.
8. Salomè, A., D'Elia, T. S., Franchini, G., Santilli, V., & Paolucci, T. (2019). Occupational therapy in fatigue management in multiple sclerosis: An umbrella review. *Multiple Sclerosis International*. https://doi.org/10.1155/2019/2027947		

The aim of this umbrella review is to assess the efficacy of the occupational therapy in the management of fatigue in people with Multiple Sclerosis.	• An umbrella review. • 10 studies were selected (5 systematic reviews, 1 meta-analysis, 3 reviews, and 1 guideline).	All reviews supported a multidisciplinary treatment. Moreover, the efficacy of occupational interventions requires the adoption of fatigue self-management programs to teach patients ways of managing daily fatigue and energy conservation programs.
9. Su, Y., Yuki, M., & Otsuki, M. (2020). Non-pharmacological interventions for post-stroke fatigue: Systematic review and network metaanalysis *Journal of clinical medicine*, *9*(3). https://doi.org/10.3390/jcm9030621		
To compare the effectiveness of non-pharmacological interventions for PSF to provide evidence for healthcare providers.	Systematic review and network meta-analysis.	The cumulative probabilities indicate that the best non-pharmacological intervention for fatigue reduction was CHM, followed by TCM and CBT.
10. Miller, K. K., Porter, R. E., DeBaun-Sprague, E., Van, M., Puymbroeck, & Schmid, A. A. (2017). Exercise after stroke: patient adherence and beliefs after discharge from rehabilitation. *Topics in Stroke Rehabilitation*, *24*(2), 142-148. https://doi.org/10.1080/10749357.2016.1200292		
To (1) determine the adherence rate with post-rehabilitation HEP and reasons for non-adherence, (2) assess for interactions between HEP adherence and self-report of depression and fatigue, and (3) determine patient beliefs about the benefit of exercise during stroke recovery.	A cross-sectional, survey study.	Several reasons for non-adherence were identified, including 'doing different exercises than the ones given by the physical therapist', as the most frequently given reason. Study participants identified positive roles of exercise in their recovery from stroke.

3.1.2 Literature Review

(Aarnes et al., 2019), This literature review is taken from Neuropsychological rehabilitation journal where 34 of 281 papers were included in the final review. The aim of the review is to identify studies examining associations between PSF and at least one factor, with the objective of identifying factors that should be investigated in patients with PSF. Demographics (gender, age), emotional health (depression, anxiety, coping strategy, and locus of control), clinical factors (sleep, pain, stroke characteristics, biological and immunological factors), social factors (social support, disabilities and functionality in daily life) and cognitive functions were found to be associated with PSF. A new framework is discussed, incorporating modifiability of PSF-related factors to heighten the clinical utility. Here ≥10 adult subjects with stroke (>18 years old) are included. The results of this review should be considered in light of some limitations, including not stringently complying with the CRD guidelines. Also, the differentiation between correlations and direct relationships and (i.e., bivariate and multivariate analyses) have not been have not been made explicit as this distinction has not always been clear from the papers reporting the relationships.

(Cumming et al., 2016), The aim of this comprehensive literature review is to estimate post-stroke fatigue prevalence and to identify the contributing factors to fatigue, by conducting a systematic review and meta-analysis. This study conducted from international journal of stroke. 49 of 921 studies met inclusion criteria. A total of 24 studies contained fatigue severity scale (FSS) data, including one that employed the 11-item version and one that administered the full Fatigue Assessment Instrument, of which the FSS is a part. In random effects meta-analysis, the pooled prevalence estimate was 50% (95% CI 43–57%), with substantial heterogeneity (I2 ¼ 94%). Neither depression status nor time point post-stroke explained the heterogeneity between

studies. In posthoc analysis, fatigue prevalence was found to be lower in the four Asian studies (35%; 95% CI 20–50; I2 ¼ 96%). A limitation of the current review was our inability to compare the studies on many of the characteristics that might contribute to post-stroke fatigue. There were insufficient data available at the study level to be able to drill down into factors that we know are associated with greater fatigue, including female sex,2 physical disability,1 cognitive impairment,25 mood disorder and 11 pre-stroke fatigues. Another limitation was the wide post-stroke time points specified in many of the chronic studies. It was not uncommon for studies to include participants who were a mean of 2–4 years and standard deviation of 2–4 years post-stroke. These large ranges may obscure important differences in fatigue prevalence across time within their samples.

(Hinkle et al., 2017), This critical analysis of published quantitative research is conducted from American Heart Association Council. This study aimed that evidence for pharmacological and non-pharmacological interventions for management are reviewed, as well as the effects of post-stroke fatigue on both stroke survivors and caregivers. Moreover, it shows the overall quality of the research was found to be poor. Few RCTs were identified, and many studies had sample sizes of ≈40 or less. Furthermore, it shows that the multidimensional aspects of PSF need to be more fully described in well-designed research. With various demographic, physical, and psychological components, it is difficult to determine the exact influence that these components have on PSF. It is especially important is to conduct research on how neurological deficits after stroke contribute to PSF. In addition, clinicians need to have a better understanding of the entity of PSF to provide appropriate treatment. This comprehension can be gained by consistently gathering data to assess short- and long-term outcomes and engaging in high-quality research such as RCTs on PSF.

Researchers and clinicians can build on this foundation in efforts to improve the QOL for patients and family members after stroke.

(Smetheram et al., 2022), The purpose of this scoping review collected from sage journal is to identify and describe the research on potential occupational therapy interventions for post stroke fatigue. Studies were conducted with stroke and traumatic brain injury patients in outpatient, inpatient, and community settings. Interventions included psychoeducation and behavior change, multicomponent programs, and mindfulness-based stress reduction therapies. The Fatigue Severity Scale and the Mental Fatigue Scale were commonly used. But Evidence for occupational therapy interventions targeting post stroke fatigue is limited. Recommendations for future research are provided.

(Wu S., 2015), The aim of this study conducted from Cochrane library is to determine whether, among people with stroke, any intervention reduces the proportion of people with fatigue, fatigue severity, or both; and to determine the effect of intervention on health-related quality of life, disability, dependency and death, and whether such intervention is cost effective. This included adults (aged 18 years and over), men and women, with a clinical diagnosis of stroke. Moreover, this included all pathological subtypes of stroke, including ischaemic stroke, haemorrhagic stroke and subarachnoid haemorrhage. And also included any method of diagnosis or assessment of post-stroke fatigue, but it was not necessary for participants to have fatigue at recruitment. Of the eight trials primarily intended to treat PSF, four trials investigated pharmacological interventions and the other four investigated non-pharmacological interventions (Fatigue Group Education therapy, Mindfulness-based stress reduction therapy, Cognitive behavioural therapy, electro acupuncture). Meta-analysis indicated a

statistically significant benefit of these interventions on treating PSF. But the included trials were small and heterogeneous, and some of them had a high risk of bias.

(Kim et al., 2022), The aim of this study was to investigate the effectiveness of occupational therapist-/ physiotherapist-guided fatigue self-management for individuals with chronic conditions. Randomised controlled trials and quasi-experimental studies of self-management interventions specifically developed or delivered by occupational therapists/ physiotherapists to improve fatigue symptoms of individuals with chronic conditions were included. A narrative synthesis and meta-analysis were conducted to determine the effectiveness of fatigue self-management. 38 studies were included, and fatigue self-management approaches led by occupational therapists/physiotherapists were divided into six categories based on the intervention focus: exercise, energy conservation, multimodal programmes, activity pacing, cognitive-behavioural therapy, and comprehensive fatigue management. While all exercise programmes reported significant improvement in fatigue, other categories showed both significant improvement and no improvement in fatigue. Although the evidence for the effectiveness of some fatigue self-management programmes is not convincing, physical exercises inspired by self-management principles may reduce fatigue symptoms, improve quality of life, and enhance other functional abilities. Further research is needed to determine the optimal type, duration, and intensity of a fatigue self-management exercise. In addition, Physical exercises inspired by the self-management principles may have positive impacts on fatigue symptoms, quality of life, and other functional abilities.

(Ablewhite et al., 2022), This qualitative, descriptive study collected from sage journal where Semi-structured interviews are conducted. The primary objective was to gain insight into the lived experiences of using day-to-day strategies to manage post-stroke

fatigue. Here, most participants had found their own ways of coping and their personal strategies included acceptance of having fatigue; ‘pacing’; keeping a diary in order to plan activities and to identify ‘trigger’ activities which induced fatigue; talking to (and educating) others about having fatigue; using relaxation; and accessing professional advice and support.

(Salomè et al., 2019), This is an umbrella review where 10 studies were selected (5 systematic reviews, 1 meta-analysis, 3 reviews, and 1 guideline) which is conducted from Hindawi journal. Purpose of this review is to assess the efficacy of the occupational therapy in the management of fatigue in people with Multiple Sclerosis. All reviews supported a multidisciplinary treatment. Moreover, the efficacy of occupational interventions requires the adoption of fatigue self-management programs to teach patients ways of managing daily fatigue and energy conservation programs. Considering the complex impact of fatigue in MS, it is necessary to provide a multidisciplinary rehabilitative approach that includes the role of occupational therapist.

(Su et al., 2020), Conducted from Journal of Clinical Medicine this literature is a combination of systematic review and network meta-analysis. Aim of this study is to compare the effectiveness of non-pharmacological interventions for post-stroke fatigue (PSF) to provide evidence for healthcare providers. In this study the cumulative probabilities indicate that the best non-pharmacological intervention for fatigue reduction was CHM, followed by TCM and CBT. First, article selection was limited to studies in the English and Chinese languages, which may have introduced a language bias and Ethnic heterogeneity; moreover, the studies were conducted in Australia, the Netherlands, and China, and differences in the prevalence and intervention effectiveness of PSF may be reflected in different countries. Second, the sample size

and limited data regarding follow-up measurements among the included articles led to an increased heterogeneity between trials. Third, methodologically, we assessed the risk of bias based on the Cochrane tool, and most trials in this review were judged to be at an unclear or high risk of bias. Fourth, we failed to evaluate some important clinical outcomes and comorbidities in PSF patients. Furthermore, in order to minimize the bias induced by the measurement, we only included FSS and may have missed other interventions. There is an urgent need to recognize PSF, and more accurate assessment methods for PSF need to be developed in order to improve our understanding of its etiology and to develop more effective clinical interventions.

(Miller et al., 2017), This cross-sectional, survey study conducted from Topics in stroke rehabilitation. Purpose of the study is to (1) determine the adherence rate with post-rehabilitation HEP and reasons for non-adherence, (2) assess for interactions between HEP adherence and self-report of depression and fatigue, and (3) determine patient beliefs about the benefit of exercise during stroke recovery. Several reasons for non-adherence were identified, including 'doing different exercises than the ones given by the physical therapist', as the most frequently given reason. Study participants identified positive roles of exercise in their recovery from stroke.

3.2 Findings from clinical placement

The fieldwork investigator completed a five-week fieldwork investigation placement in the neuro-outpatient unit at CRP, Savar with the aim to synthesize the evidence regarding PSF management and associated occupational therapy interventions. Most of the patient investigator observed, were suffering from fatigue.

In the neuro out-patient unit, it has been seen that occupational therapy interventions of PSF management are being given both consciously in some cases and unconsciously in some cases by the clinicians. However occupational therapy interventions are not directly provided to manage the fatigue of a stroke patient, but it is also managed by providing interventions for other aspects of the stroke. Even no specific measurement is used to detect severity of fatigue. Only subjective answers with negative or positive way are taken about presence of fatigue from the patients by OTs.

For example, when a stroke patient comes for taking occupational therapy in the neuro out-patient unit, the patient gets education about various factors of stroke by an occupational therapist OT. In that case, he also gets a good idea about fatigue. This is a part of education program and this education program also a part of fatigue management intervention. OTs also educate and teach patients how to do proper bed mobility and appropriate transferring to make the task easy and to conserve patient’s energy there. And these techniques are also a part of work simplification techniques and energy conservation techniques which are also used to manage persistent fatigue. Moreover, pacing activities and grading activities also help to manage fatigue of the post-stroke patient. OTs also advised patience to refrain from continuous work. They advised to take rest between tasks. As a result, the patient's blood pressure remains under control and taking rest also helps to reduce fatigue after stroke. Furthermore, in this unit OTs try to make the place quiet and calm where they conducted therapy session to provide occupational therapy interventions to the stroke patient. Managing a proper quality environment also helps to reduce fatigue of the stroke patients while providing therapy interventions.

Table 2: Findings of interventions to manage post-stroke fatigue.

Findings of interventions from 10 articles	**Findings of occupational therapy interventions from neuro out-patient unit**
• Managing associated factors of fatigue (Emotional health (depression, anxiety), sleep disturbance, smocking, pain, environment etc.) • Psychoeducation and behavior change • Multicomponent programs • Mindfulness based stress reduction (MBSR) therapies • Self-management (Exercise programmes, energy conservation, multimodal programme, activity pacing, cognitive behaviour therapy, comprehensive fatigue management programmes) • Exercise programmes (aerobic exercise, graded exercise, comprehensive home-based exercise, resistance exercise, person-centered physical therapy and ambulant activity feedback) • Energy conservation techniques (information on fatigue, importance of rest, balanced schedules, communication, priorities, activity analysis, and ergonomics) • Multimodal programme (combined cognitive therapy, graded activity training, physical exercise, myofascial	• Managing associated factors of fatigue (Emotional health (depression, anxiety), sleep disturbance, smocking, pain, environment etc.) • Graded exercise • Resistance exercise • Energy conservation techniques (information on fatigue, importance of rest, balanced schedules, communication, priorities, activity analysis, and ergonomics) • Grading activity training • Practice • Fatigue education

release massage, physical activity, comprehensive fatigue self-management intervention, aerobic exercise, exercise education, energy conservation education, and implementation and relapse prevention) • Comprehensive fatigue management programmes (it's consisted of various topics, including possible causes of fatigue, its impacts on life, communications and relationships with others, body mechanics, daily activity analysis, balanced lifestyle, importance of exercise, stress management and sleep hygiene) • Treatment, nursing, rehabilitation, education as usual (AU) • Cognitive behavioral therapy (CBT) - psychoeducation CBT framework, reorganization of daily schedules, energy conservation, cognitive restructuring, sleep interventions, strategies for physical and mental fatigue, and review techniques for relapse prevention • Community health management (CHM) - drug management, fatigue education, community activities, and psychological care • Circuit training (CT) • Hyperbaric oxygen therapy (HOT) • Music therapy (MT) • Respiratory training (RT)	

• Traditional Chinese medicine (TCM) – acupuncture, moxibustion treatment, transcutaneous acupoint electrical nerve stimulation.	

The investigator also asked the stroke patients about their fatigue severity levels according to fatigue severity scale (FSS) before and after treatment. The majority of patients were pleased with the treatment and provided positive feedback, while a few patients reported no improvement based on their duration and severity level.

CHAPTER IV: Discussion

4.1 Discussion

The fieldwork investigator in this study gives an overview about the insufficiency of data to find occupational therapy interventions to manage fatigue of patients suffering stroke.

In this chapter, the findings of the study are discussed concerning the clinical findings which are supported by the evidence. The discussion focuses on occupational therapy interventions in managing post stroke fatigue in neuro out-patient unit at CRP, Savar, Bangladesh. In this fieldwork investigation, 10 studies are included. About different interventions that help to manage fatigue of post-stroke patients are discussed in these studies. Seven out of ten studies discussed about fatigue severity scale (FSS) and there this measurement achieve a significant priority.

Stroke is a most common chronic symptom of a post-stroke patient. It creates a negative impact on a patient's mental health, physical function and activities of daily livings. Thus, quality of life of a post-stroke patient is also affected. Managing post-stroke fatigue may improve quality of life, increase participation in everyday life, enhance functional abilities, increase rate of productivity, reduce fatigue symptoms and improve activity level.

Occupational Therapists (OTs) at CRP uses evidence-based practice for providing interventions to stroke patients. Evidence-based practice is increasingly important to guide and inform clinical decision making through to increase their knowledge in respective discipline thus improving patient care. During five-week placement of fieldwork investigation at neuro outpatient unit, CRP, Savar, investigator observed

occupational therapy practitioner's treatment protocols and approaches. In that unit, many occupational therapists (OTs) advice stroke patients to maintain an appropriate diet or nutrition. They also suggest to use provided splint properly in order to reduce fatigue. They also arrange a group therapy as a session. These are some new things as an intervention which investigator did not notice in his any literature review. On the contrary, there are many non-pharmacological interventions (Psychoeducation and behavior change, Multicomponent programs, Mindfulness based stress reduction therapies, Self-management, Treatment, nursing, rehabilitation, education as usual, cognitive behavioral therapy, community health management, circuit training, hyperbaric oxygen therapy, music therapy, respiratory training, traditional Chinese medicine etc.) exist in the related articles which contribute in improving quality of life by managing fatigue of stroke survivors. By using theses interventions that go along with the occupational therapy's treatment protocol, occupational therapists (OTs) can expand their scope in managing fatigue of stroke survivors and rehabilitation services.

4.2 Strengths and limitations of the investigation

4.2.1 Strengths

During fieldwork investigation, investigator have some strength from this field. These are given below:

- The fieldwork investigator obtained approval from CRP in neuro outpatient unit.
- Investigator got opportunity to work with patients and Occupational Therapy practitioners.

- During fieldwork investigation time, the investigation is supervised by the fieldwork supervisor.
- Student investigator got resources from journal and article.

4.2.2 Limitations

During fieldwork investigation, investigator have some limitation from this field. These are given below:

- Got chance to see fewer patients.
- Fieldwork investigation time was too short.
- Open access article was limited.
- Due to review studies only published in English, other relevant studies were missed.
- Evidence for occupational therapy interventions targeting post stroke fatigue is limited.

CHAPTER V: Conclusion

In conclusion, the analyses indicate the insufficiency of literature on managing post-stroke fatigue (PSF) by the interventions that are applicable by occupational therapists (OTs). According to the studies that have been evaluated, PSF interventions may be helpful for stroke victims, especially those who are still in the chronic stages of recovery. Further study in this field is necessary, particularly need to focus on the management of post-stroke fatigue (PSF) in the acute stage to help stroke patients maximize their recovery potential. Finally, OTs may benefit from focusing on aspects that are shared by the interventions that are examined and reported in this review.

List of References

Aarnes, R., Stubberud, J., & Lerdal, A. (2019). A literature review of factors associated with fatigue after stroke and a proposal for a framework for clinical utility. *Neuropsychological rehabilitation*, *30*(8), 1449-1476. https://doi.org/10.1080/09602011.2019.1589530

Ablewhite, J., Nouri, F., Whisker, A., Thomas, S., Jones, F., Nair, R. d., Condon, L., Jones, A., Sprigg, N., & Drummond, A. (2022). How do stroke survivors and their caregivers manage post-stroke fatigue? A qualitative study. *Clinical Rehabilitation*, *36*(10), 1400-1410. https://doi.org/10.1177/02692155221107738

Cumming, T. B., Packer, M., Kramer, S. F., & English, C. (2016). The prevalence of fatigue after stroke: A systematic review and meta-analysis. *International Journal of Stroke*, *11*(9), 968-977. https://doi.org/10.1177/1747493016669861

Hinkle, J. L., Becker, K. J., Kim, J. S., Choi-Kwon, S., Saban, K. L., McNair, N., & Mead, G. E. (2017). Poststroke fatigue: emerging evidence and approaches to management: a scientific statement for healthcare professionals from the american heart association. *Stroke*, *48*(9), e159-e170. https://doi.org/10.1161/STR.0000000000000132

Kim, S., Xu, Y., Dore, K., Gewurtz, R., Larivière, N., & Letts, L. (2022). Fatigue self-management led by occupational therapists and/or physiotherapists for chronic conditions: A systematic review and meta-analysis. *Chronic illness*, *18*(3), 441-457. https://doi.org/10.1177/17423953211039783

Miller, K. K., Porter, R. E., DeBaun-Sprague, E., Van, M., Puymbroeck, & Schmid, A. A. (2017). Exercise after stroke: patient adherence and beliefs after discharge from rehabilitation. *Topics in Stroke Rehabilitation, 24*(2), 142-148. https://doi.org/10.1080/10749357.2016.1200292

Salomè, A., D'Elia, T. S., Franchini, G., Santilli, V., & Paolucci, T. (2019). Occupational therapy in fatigue management in multiple sclerosis: An umbrella review. *Multiple Sclerosis International*. https://doi.org/10.1155/2019/2027947

Smetheram, T., Amiama, M. E., Hébert, D., Law, G., & Dawson, D. R. (2022). Occupational therapy interventions for poststroke fatigue: a scoping review. *OTJR: Occupation, Participation and Health*. https://doi.org/10.1177/153944922210879

Su, Y., Yuki, M., & Otsuki, M. (2020). Non-pharmacological interventions for post-stroke fatigue: Systematic review and network metaanalysis *Journal of clinical medicine, 9*(3). https://doi.org/10.3390/jcm9030621

Wu S., K., M.A., Chun, H.Y.Y., Cowey, E., Pollock, A., Macleod, M.R., Dennis, M., Keane, E., Sharpe, M., and Mead, G.E. (2015). Interventions for post-stroke fatigue. *Cochrane Database of Systematic Reviews*(7). https://doi.org/10.1002/14651858.CD007030.pub3

Appendix