Nursing | Senior Theses   Department of Nursing

5-2022

Effective Therapies and Nursing Approaches: Improving Cognition in Older Adult Stroke Patients

Selyna Baltazar
Dominican University of California

https://doi.org/10.33015/dominican.edu/2022.NURS.ST.11

Survey: Let us know how this paper benefits you.

Effective Therapies and Nursing Approaches:

Improving Cognition in Older Adult Stroke Patients

Selyna Baltazar

School of Nursing, Dominican University of California

NURS 4500: Nursing Research and Senior Thesis (Capstone)

Dr. Patricia Harris

December 13, 2021

Abstract

Background

Ischemic stroke occurs in thousands of older adults throughout the year. Due to the lack of oxygen entering the brain, many patients experience a decline in cognitive function due to ischemic stroke. Cognition is the ability to understand, learn, and remember information which is needed for completing daily tasks. Modern technology has allowed for patients to survive ischemic strokes but has yet to provide proper screening tools and methods for stroke-related cognitive impairment.

Objective

To investigate the best practices for identifying, treating, and caring for patients with a cognitive injury related to a stroke. A review of the research literature will be performed and a proposal for further research will be provided.

Summary of Findings

Through the review of the research different types of screening tools were identified, which potentially could assist in determining whether or not a patient is experiencing declines in cognition after a stroke. Guided therapies and interventions used by stroke patients exhibited positive effects on their cognition. Self-management programs also provided beneficial outcomes for participants, which also has allowed them to be more active in their plan of care. Despite all the productive findings, further research should be conducted to support the studies' results and close the gaps within the research literature.

Proposal

Through a mixed-method study that employs quantitative and qualitative methods, researchers will investigate the use of guided visualization and self-management training,

implemented for patients by nurses. The goal is to determine the impact of these interventions to find the most effective for potentially improving the cognitive function of stroke patients.

Keywords: stroke, cognitive impairment, treatment, quality of care, interventions, screening

Contents

Introduction

According to the Centers for Disease Control (CDC, 2021), over 795,000 people in the

United States have experienced a stroke annually. Over eighty percent of the strokes experienced

in the United States (U.S.) are ischemic strokes (CDC, 2021, para. 4). Ischemic strokes occur when the blood vessels in the brain become occluded or narrowed, severely reducing the blood flow to the brain (Mayo Clinic, 2021). Due to the lack of oxygen from reduced blood flow, the brain becomes damaged, affecting cognitive function.

Cognitive function allows for the ability for an individual to learn, think, and recall information, which are all components that are vital for completing activities of daily living (National Institute of Aging, 2020). Ischemic stroke deprives the brain of the blood supply and oxygenation required to facilitate such functions, resulting in vascular cognitive impairment. Cognitive impairment is "when a person has trouble remembering, learning new things, concentrating, or making decisions that affect their everyday life" (CDC, 2011). Without these abilities, the transition back to daily living after hospitalization becomes difficult for an individual by tenfold.

Modern technology and medicine have allowed for millions of older adults in the United States to survive ischemic strokes. But with more stroke survivors comes a higher risk for cognitive impairment and injury among patients. Since most injuries after a stroke are related to sensory and motor impairment, a decline in cognitive function may be overlooked (Kalaria et al, 2016). With new developments and better understandings of how to treat and prevent stroke, it is imperative to also find optimal practices for identifying cognitive impairment, treatments on how to effectively care for and improve cognitive impairment, and to create the best outlook for patients' well-being after such a traumatic injury. As patients' cognitive abilities decrease, it heavily influences the quality of care a nurse is able to provide for their patients, as oftentimes the patients are no longer able to communicate, understand, or behave as they previously did in their daily lives.

Literature Review

What are the most effective therapies and approaches of nursing for identifying, managing, and improving cognition after a stroke in older adults?

With the literature review focusing on cognitive impairment related to ischemic stroke, much of the research done was based around keywords such as "cognitive impairment", "stroke", "cognition screening", "cognitive impairment interventions", and "cognitive therapy". The articles used in the research of the literature review were found through the PubMed Central database using the keywords, but also led me to articles that were in the Cochrane database.

Through the research done, six articles were able to be used as evidence for the research review about screening tools and improving cognitive impairment. The studies have been organized into four categories. The first category is pertinent to screening tools for stroke-related cognitive impairment, the second is related to therapeutic interventions that have been used to aid cognitive deficits, and the third category focuses on self-management interventions. See the Literature Review in the Appendix for a summary of each article.

Screening Tools for Cognitive Impairment

Screening for cognitive impairment is important for the proper development of appropriate treatment and care for a recovering stroke patient. Two articles in this category discuss various ways of evaluating for cognitive impairment among patients and early screening can allow for early development of interventions to quickly address the deficits caused by stroke. Evaluating cognitive function has been done through assessment of neurological tests and daily

functioning, along with further analyzing biomarkers that have been linked to declines or changes in cognition.

The validation study, "Screening for Cognitive Impairment with the Montreal Cognitive Assessment in Chinese Patients with Acute Mild Stroke and Transient Ischaemic Attack" (Zuo et al, 2016), aimed to establish the checkpoint in the Montreal Cognitive Assessment, a brief screening tool, used for cognitive impairment found in patients who had a mild stroke or TIA. The study recruited 80 patients who had an acute mild ischemic stroke, as well as 22 patients who had experienced a transient ischemic attack (TIA). Those who had experienced an acute stroke were diagnosed using the WHO criteria, whereas the TIA was determined by the American Stroke Association (Zuo et al, 2016). A meta-analysis using a non-randomized controlled trial was performed. A series of neuropsychological tests were done on the selected patients. The tests aligned with the standards for cognitive impairment under the National Institute of Neurological Disorders and Stroke, along with the Canadian Stroke Network (Zuo et al, 2016). Patients were assessed by their basic daily functioning, using the Katz basic activities of daily living scale. Complex function was also judged using the Brody instrumental activities of daily living scale. Participants were tested within two weeks of experiencing a mild stroke or a TIA. Of those participants more than half of them had cognitive impairment which was detected through the series of neuropsychological tests (Zuo et al, 2016). The Montreal Cognitive Assessment was found to be a sensitive and specific tool for identifying cognitive impairment in patients who had experienced a mild stroke. Due to the findings of this study, cognitive deficits potentially could be identified earlier, allowing for early intervention and more focused and prioritized treatment. A couple limitations of the study include lack of random sampling and a small sample size.

A study of "Serum Tissue Inhibitor of Metalloproteinase-1 and Risk of Cognitive Impairment After Acute Ischaemic Stroke" by Ge et al (2020), examined the relationship between serum tissue inhibitor metalloproteinase-1 (TIMP-1) with post-stroke cognitive impairment was investigated. TIMP-1 is a serum biomarker that has been shown to increase after an episode of cerebral edema (Lorenzl et al, 2003). To select the participants, patients could not be visually and hearing impaired, and had to complete cognitive function assessments (Ge et al, 2020). The study had 598 ischemic stroke patients who were successfully measured for serum TIMP-1. Patients were assessed based on fasting blood samples, blood pressures, the use of the Mini-Mental State Examination and the Montreal Cognitive Assessment at three months of being a part of the study (Ge et al, 2020). When the participants were assessed, 316 of the 598 included had cognitive impairment after 3 months (Ge et al, 2020). The study found an association between higher TIMP-1 levels and the cognitive impairment rate. The study demonstrated the importance of testing biomarkers to identify and diagnose cognitive function deficits following a stroke. The limitation of this study, however, includes how the study was mainly done on stroke patients from China, so the important findings may not apply to other populations in different countries.

With stroke rehabilitation, screening for cognitive impairment is an aspect that tends to be overlooked in their care and plan of treatment (Zuo et al, 2016). When treating a patient who is recovering from a stroke, motor function is the main focus of rehabilitation and cognition becomes a secondary priority. Cognition is important for patients as it is how they understand and perceive what is around them, how they comprehend language, and how they make decisions for themselves. Without proper screening, there would continuously be a disconnect between their treatment plan and how the patient recovers because of the lack of awareness of their

cognitive function and what the patient is able to comprehend. Without understanding the extent of a patient's cognition, nurses would not be able to properly care for the patients to the best of their ability. Proper screening tools allow for early recognition of these deficits pens up opportunities for early actions that may help avoid further declines in cognitive function.

Therapeutic Interventions for Cognition

Therapeutic interventions provide guidance in improving cognition by providing interventions that focus on specific aspects of cognition, eventually improving cognitive function as a whole. Two therapies may provide benefits. First, speech and language therapy offers opportunities for language comprehension and decision-making, needed for patients to be able to communicate with others (Brady et al, 2016). Next, physical activity involves patients in making voluntary decisions about their bodies and in aids in patients comprehending how to move their bodies. Both therapies provide patients with a different way of perceiving what is going on around them.

The systematic review performed by Brady et al (2016), "Speech and Language Therapy for Aphasia Following Stroke," assesses the effects of speech and language therapy, or SLT, of aphasia after a patient has undergone a stroke. Fifty-seven studies were examined involving 3,002 participants who had aphasia due to a stroke they experienced. The systematic review used randomized controlled trials that compared the difference between the use of speech language therapy and no use of speech and language therapy (Brady et al, 2016). They also compared any effects between whether or not the patients received social support or stimulation, as well as implementing various methods, frequencies, and intensities in the use of speech and language therapy (Brady et al, 2016). The study provides evidence supporting the effectiveness of speech

and language therapy for people who developed aphasia due to a stroke (Brady et al, 2016). Speech and language therapy was shown to improve patients' functional communication, reading, writing and expressive language compared to those who did not receive the therapy. Overall, SLT given at high intensity, high frequency, and over a long duration was shown to be most beneficial for individuals experiencing aphasia related to stroke (Brady et al, 2016). The study included variations in SLT implementation for the participants, which allowed for more observations to be made, further emphasizing the effectiveness of speech and language therapy for those with aphasia. A strength of this study is the focus on using randomized control trials, which are considered to provide a high level of evidence. However, the study also contains limitations. For example, only one half of the studies in the analysis used key quality features, such as randomization or adequate sample size. Therefore, there was a lack of clarity about whether or not all study results were useful or accurate..

The "Effects of Physical Activity on Poststroke Cognitive Function: Meta-Analysis of Randomized Controlled Trials" (Oberlin et al, 2017) evaluated the effects of physical activity training on cognitive function in individuals with a history of stroke. The meta-analysis aimed to identify the interventions and characteristics among post stroke patients that may mediate the treatments' effects on the individuals. The study used randomized controlled trials that included 736 participants who were stroke survivors and were examined to see an association between the use of physical activity (PA) training cognitive function after stroke (Oberlin et al, 2017). The participants recruited were of 18 years or older and were a part of the training program of strength and aerobic training in standard post-acute rehabilitation centers over the course of four weeks. The randomized controlled trials included a clearly defined control and experimental condition aimed to increase physical activity, as well as a neuropsychological test for cognition

used as a baseline measure and after the trial (Oberlin et al, 2017). After examining the trials, the results of the meta-analysis exhibited a positive effect from the use of PA training for cognitive performance poststroke. The use of the treatment presented small to moderate treatment effects, even in individuals who experienced chronic stroke phases (Oberlin et al, 2017). Some limitations of the meta-analysis were that many of the studies were unable to properly document the adverse events that occurred during the trial. Another flaw to consider is that only two of all the studies were able to successfully meet low risk of bias, due to inconsistent documentation of results. Nonetheless, the meta-analysis was successful in managing the use of various physical activity training methodologies among the participants and emphasized the impact of physical activity on cognition.

The therapeutic interventions in these two studies were assessed and demonstrated positive effects on cognition. Guided therapies, such as those offering guidance in Speech and Language and Physical Activity, provide a way to focus on specific facets of cognition, potentially strengthening more than one facet of brain functioning and improving cognitive function overall. Strengthening cognitive function is especially important for stroke rehabilitation because cognition is needed for patients to be able live functional lives after a traumatic event. Through the studies of speech and physical activity therapy, which provide evidence of exercising the mind in different ways through different types of external stimulation, further supports that cognition can be enhanced if given the proper attention through appropriate interventions, as needed for each individual.

Self-Management Interventions

The involvement of patients in their care is very important as it allows them to practice every component of cognitive functioning. Self-management allows the patients to make decisions for themselves, grasp cues from their environment, better understand what is being said to them, and assess what they need for themselves. The meta-analyses investigated self-management programs for patients with varied interventions for the individuals. Nurse-led interventions allow some guidance for patients, but ultimately letting them make choices for themselves. Generalized advice for self-management gives patients the freedom to be more independent with addressing their needs.

The study of the Development and Evaluation of a Nurse-led, tailored Stroke Self-management Intervention (Kidd et al, 2015), targets to build interventions for stroke self-management that address the needs and goals of the stroke survivors during their first year of stroke recovery. This mixed method study developed the self-management interventions using qualitative interviews and focus groups involving stroke patients and nurses (Kidd et al, 2015). The study consisted of 26 stroke survivors who have had between three to twelve months of recovery time, as well as sixteen nurses who specialize in stroke care (Kidd et al, 2015). The patients used a self-management plan catering to their needs and were assessed with individual assessments that tested to see if they were ready to self-manage, through the use of goal setting and encouraging interviews (Kidd et al, 2015). The study provided information on how self-management strategies for stroke patients can impact a patient's behavior, cognitive function, psychological functioning, and well-being. Granted, the documentation of the success and helpfulness of the interventions were inadequately illustrated, but nonetheless still showed the significance of self-management and goal setting for patients. This is one of the first studies to

include both stroke patients and nurses in the development of intervention plans and support for

a community setting (Kidd et al, 2015). Unfortunately, the study only included a small sample

size of stroke survivors and nurses. A large number of the participants were male and were not

experiencing severe cognitive deficits, so the results cannot really be applied to all stroke

patients yet. Further investigation is needed to be done in order to improve the intervention plans

that are able to address a larger population.

Through the systematic review by Fryer and colleagues, called: "Self-Management

Programmes For Quality of Life in People with Stroke" (2016), self-management interventions

for quality of life were assessed to see the effects among adults post stroke. Through a series of

randomized controlled trials for the meta-analysis and systematic review, 1863 participants over

the age of eighteen who experienced stroke were included in 14 different trials to undergo

different self-management strategies in various countries over different periods of time (Fryer et

al, 2016). The self-management strategic interventions were tailored to the specific type of stroke

the patient experienced, as well as interventions that were used for the general study population.

The interventions could use problem-solving, coping mechanisms, setting goals, and self-

monitoring. A Medline search strategy was also developed with the Cochrane Stroke Group

Information Specialist with the use of databases such as MEDLINE, EMBASE, SCOPUS, and

PsychINFO, in order to find relevant reviews and studies that could assist with the meta-analysis

(Fryer et al, 2016). Other databases were used to find ongoing trials that were also relevant to the

current study being done and could also be included or contribute to the review. The measure of

outcomes for the study was quality of life, self-efficacy, activity levels, impairments, health

service usage, and behaviors toward healthcare (Fryer et al, 2016). The meta-analysis provided

evidence that self-management programs are beneficial and improvement in cognitive function

can be shown for those who have experienced a stroke in the past (Fryer et al, 2016). The meta-analysis included studies that tested self-management among many different types of participants across different countries, which serves to increase the generalizability of the meta-analysis. But also due to the variety of circumstances, the results are highly variable, leaving room for inconsistencies in the findings, since the interventions could have been done differently in each country where the studies were conducted.

Through the meta-analyses, self-management interventions demonstrated significant improvement in the cognitive function of the study participants. The involvement of the patients in their care allows collaboration between nurses and patients, providing both sides a better understanding of the patients' needs and finding interventions that best cater to their needs. Allowing patients to choose their care and assisting with treatment plans is critical for the rehabilitation of their cognition as it brings the individuals one step closer to a better well-being and living how they were before their stroke.

With research done, various screening tools for cognition were discovered, assessed and essentially validated. Aside from the screening tools, different types of therapeutic and self-management interventions were shown to be beneficial in improving a stroke patient's cognitive impairment. Each type of intervention implemented provided a unique way of enhancing cognition among various populations. Unfortunately, much of the research also had some missing results and some of the research identified bias in studies that were analyzed (Brady et al, 2016). But regardless, all the research still provided some solutions that are in dire need by those in the stroke community. Even though further research may need to be done for some of the interventions, the findings are valuable in that they still provide the possibility of positive outcomes among those who experience stroke. Some gaps in the research that were encountered

was whether or not these findings can be used across the whole stroke population. Due to some inconsistencies in the results, some of the research findings may not be applicable or effective for all cognitive deficits related to stroke and further study is needed.

Proposal for Further Study

What are the most effective therapies and approaches of nursing for improving cognition and tracking progress after a stroke in older adults?

How is cognition among stroke patients affected by two different interventions incorporated into the patient's care?

The research review looked into various types of interventions and sought to determine their effectiveness in improving cognitive impairment in post-stroke patients. This new study proposes to implement interventions for a stroke patient's care to determine the most effective nursing care to enhance their cognitive function despite all the trauma from the injury. The implementations that were reviewed were either more therapeutic guidance as a part of the participants' care or related to more self-management in which the patients are able to take more charge in their care and what they want to do every day. Both types of interventions are very important in providing cognitive stimulation. The only inquiry now relates to which treatment implementation is most helpful in improving cognitive deficits within a patient. Further research regarding screening tools for decreased cognition was also done. Assessing for changes in cognitive function tends to be overlooked, but is very important in making sure that the care implemented into a patient's care is adequately catered to their needs. The proposed study hopes

to be able to implement both screening and different interventions in order to properly address cognitive declines.

Theoretical Framework

The Nursing Need Theory, developed by Virginia Henderson, is a conceptual framework that emphasizes the significance of developing a patient's independence in order to keep their post-hospitalization progress on track, not delayed. Henderson also emphasized the importance of nursing and how the "unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery, that he would perform unaided if he had the necessary strength, will or knowledge" (Younas & Sommer, 2015, p. 444). Nursing activities were developed into fourteen categories, all relating to standard human needs. In relation to the study on the improvement of cognitive impairment, three of the components related to the important nursing activities work well with the objective of the research. These components include "communication with others in expressing emotions, needs, fears, or opinions"; "work in such a way that there is a sense of accomplishment"; and "learn, discover, or satisfy the curiosity that leads to normal development and health and use the available health facilities" (Younas & Sommer, 2015, p. 445). The three components all encircle the objective that is to be achieved or maintained by the research study, which is to develop and improve the deficits in cognition caused by ischemic stroke. Improvements in cognitive function are vital in order for individuals to be able to live life to the most optimal level. The development of ideal interventions regarding an individual's cognitive impairment would assist in further progress in living an independent life after such a traumatic injury. Both guided therapeutic implementations

and self-managed practices catering to cognitive improvement can further boost the progress a patient makes after hospitalization.

Research Aims

The primary research aims are to determine whether guided therapy and management or patient self-management, compared to a control group who receives usual care, is more effective in improving cognitive impairment, measured with appropriate screening tools.

The research also aims to determine to what degree cognition can be improved through the interventions implemented.

Ethical Considerations

Some ethical considerations to take into account for the study include making sure that the individual's participation is voluntary. The interventions used to treat cognitive impairment would become a part of their routine tasks and activities, so the participants need to be aware of what they are taking part in. The individuals in the study also need to be informed about how their progress is going to be monitored, including qualitative observations or interviews and quantitative screening tools, to gather data. Because the study is using qualitative and quantitative data, it is crucial to make sure that the personal accounts and screening results that are shared within the researchers remain confidential in order to protect the identity and privacy of the individuals. The study must also be approved by the Institutional Review Board before being conducted.

The study will include stroke patients with mild impairment only to help ensure that potential participants can understand the study. If any potential participant is unable to

understand the nature of the study, even though only mild cognitive impairment has been identified, informed consent may be sought from the patient's legally designated surrogate decision-maker.

Research method

A longitudinal mixed-method research study is proposed, which will implement both guided therapeutic interventions and self-management to improve cognition in stroke patients who experience mild impairment. A 12-month study is proposed. Demographic data, including age, ethnicity, race, gender identity and social support will be gathered in the beginning of the study.

At the start, middle, and end of the study, each participant will be interviewed to gain insight about experiences with their cognitive impairment and screened to assess the individual's degree of cognitive deficit.

Qualitative interviews of 30 to 60 minutes (depending upon the preference of the interviewee) using open-ended questions will be conducted at the beginning of the study, after six months, and the end of study to explore participants' perceptions of their experiences. Examples of questions include:

- Tell me what is going on with you.

- How have you been coping with changes you've experienced since your stroke?

- What types of things cause you stress?

- What types of things do you do to help yourself feel happy?

Quantitative screening tools, including the Montreal Cognitive Assessment, as described by Zuo et al (2016) and Ge et al (2020), and the Mini-Mental State Examination, as described by

Ge et al (2020), will be used to measure participants' cognitive functioning. Two tools will be used to assess reliability of the instruments and possibly improve validity of the methodology.

The study will follow three groups and each group would undergo a different treatment plan. The first group will receive twice weekly one hour therapeutic interventions for cognitive rehabilitation, including physical activity training and speech and language therapy integrated into their treatment plan. Whereas the second group will use self-management techniques, including use of goal setting and encouragement with direction from trained research nurses to help the participants decide what is best for them. The third group will not receive any additional interventions, as they are the control. The control group will serve as the baseline to see if or how cognition can change without the additional therapeutic interventions and will participate only in the three interview and screening sessions. As the study progresses over 12 months, the participants will be tracked on their progress with their treatment plan.

Collaboration will be sought from local clinics for use of an appropriate room for screening assessments and interviews and or community centers for spaces that can be used for the speech and language and exercise training. Research nurses will perform home visits, one hour twice per week, for individuals in the self-management technique group.

The study is designed to collect data that will help differentiate differences (if any) in how cognition is affected based on the type of treatment the individuals receive, as well as which interventions potentially are most effective for improving cognitive declines post-stroke.

Sample Population

The sample population would be individuals from all over the US who have experienced ischemic stroke and are experiencing mild cognitive impairment due to the stroke they had

undergone. Participants will be individually screened for their cognitive impairment prior to implementing specific interventions into their treatment plan.

Sample Size

The sample size for this study would be 45 participants. The study would be observing a relatively small sample to assess feasibility and efficiency of tracking participants progress and follow up treatment plans throughout the study. With the research study following three groups to gather data, each group will have 15 participants each. Fifteen participants will receive guided interventions, 15 participants will be a part of a more self-guided or managed treatment plan, and 15 individuals will receive usual care followed as the control group.

Sample Recruitment

For recruiting the participants, researchers will work with community clinics in San Francisco, Marin, Sonoma, Solano, and Contra Costa counties in California. The researchers will provide information about the study to managers and leave brochures about the study with contact information for the researchers. Inclusion criteria will be: people who have undergone an ischemic stroke; have been diagnosed with a mild impairment, and are above the age of 60. The San Francisco (SF) Bay Area has a diverse ethnic, racial, and gender identity population, and researchers anticipate the inclusion of participants who reflect the larger SF population. A total of 45 participants will be recruited for the study in order to show a representative sample of the stroke population in the country.

Analysis

Because this is a qualitative and quantitative study, the participants will be observed during training sessions or home visits on their progress in using the therapeutic interventions or self-management techniques. Researchers will document any changes, positive or negative, in cognitive function for members of all three groups through the screening sessions and interviews. The interviews will be conducted to explore participants' perceptions of any changes within themselves. A limitation of this study may be that members of the control group may implement their own healthy additions, such as regular exercise and healthy eating habits, to their daily routines and activities, which could appear to minimize positive changes in cognition for the intervention groups . On the other hand, the interviews can serve to find out about lifestyle changes in which all study participants might be engaged.

For analysis of qualitative data collected for the study, content analysis and narrative analysis will be used to describe the stories gathered from the participants. Quantitative data will be analyzed using descriptive statistics for demographic data and analysis of variance (ANOVA) to measure changes between groups and in individuals over time.

Potential Outcomes

After the research study has been conducted and completed, an outcome anticipated from the study would be that the participants did not experience any further cognitive decline. The hope with the implementations of the interventions into their treatment plan was ultimately to ensure no further decline or deficits occur. The screening done prior to the start of the study would determine each client's baseline in cognitive functioning, so all the data collected would be compared to the baseline data that the researchers recorded. Another potential outcome

resulted from the trial treatment plans would be any form of improvement in the participants'

cognition. The biggest expectation that could come from this study is that the participants are

able to live easier lives due to the continuous intellectual stimulation in an effort to preserve their

cognitive function. Whether or not there will be a degree or level of cognitive improvement in

the participants is unknown, but the researchers hope that they are able to live more optimal,

improved, and independent lifestyles that allows them to be more active in decision making for

their care compared to their post-stroke hospitalization.

Conclusion

Cognitive impairment is a compelling issue in the stroke community which has not been

adequately addressed in today's healthcare system. Much of what has contributed to this

weakness is the lack of screening done for the patients in order to assess how far their cognition

has declined due to the ischemic stroke they had undergone. The review of the research was able

to find tools that could identify markers and behavioral changes in daily activities, indicative of

cognitive decline. A lack of screening also led to the integration of treatments or therapies that

did not line up with the patients' needs.

The research review was able to delve into various types of interventions that not only

used a more direct approach to care with the help of health professionals, but also methods of

management that allows for patients' to be more proactive in decision-making for how they

want to progress in their treatment. Prior to the research done, the pressing question related to

what the most effective approaches of nursing could help identify, manage, and improve

cognitive impairment in stroke patients. The data and experiences studied revealed various

screening tools, as well as practical and supportive forms of nursing and therapeutic

interventions that could further improve cognitive function within patients.

A crucial key from the research conducted would be the importance of screening and

using cognitive assessments to determine the extent of an individual's cognitive impairment.

Determining how much a patient's cognition has declined is imperative for deciding the course

of treatment and nursing interventions to integrate into their lifestyle. Otherwise, healthcare

professionals, most specifically nurses, would not know how to adequately plan for their

patients' care to provide them with optimal outcomes. The importance of supplementary

methods of care was outlined, as both types of interventions studied in the literature

demonstrated beneficial outcomes in changing cognitive function among the participating

individuals. The care provided within the hospital cannot be the only plan of care that a patient

receives if improvement is anticipated. Consistency in mental stimulation is essential for positive

changes and further advancements to be observed.

Developments in the profession of nursing can be made, as the discoveries of various

screening tools and advantageous interventions or tools could be incorporated into nursing-

patient care within the hospital. With these programs and methods integrated into the hospital

setting earlier on in a patient's care, the recovery time and process could potentially be decreased.

There would no longer be a delay in properly identifying an individual's needs, and more

personalized care could be provided allowing for more patient-focused care. These methods for

identifying and managing deficits in cognitive function among hospital patients would also allow

for nurses to be able to determine what is best for their patients, facilitating interprofessional

collaboration to provide the highest quality of care.

Further research for efficient screening tools needs to be done, as the tools in the studies in the literature review were very different from one another, and produced strikingly different results for detecting decreases in cognitive function. Nonetheless, both screening methods were still valuable in identifying changes in cognition within a patient.

Despite all the significant findings from the research conducted, further exploration and analysis regarding both directed therapy methods and self-guided management interventions should be done as there were many gaps in the results. Much of the research provided positive results as there were beneficial outcomes to cognitive impairment because of the studies that were carried out. With additional investigation, researchers could determine the most effective interventions to implement in a patient's plan of care to provide the most optimal results for cognitive improvement.

References and Bibliography

Brady, M. C., Kelly, H., Godwin, J., Enderby, P., & Campbell, P. (2016). Speech and
     language therapy for aphasia following stroke. The Cochrane database of

systematic reviews, 2016(6), CD000425.

https://doi.org/10.1002/14651858.CD000425.pub4

Centers for Disease Control and Prevention (CDC). (2021, May 25). Stroke facts. *Centers for Disease Control and Prevention.* Retrieved November 10, 2021, from https://www.cdc.gov/stroke/facts.htm.

Centers for Disease Control and Prevention (CDC). (2018, July 17). What is self-management education? *Centers for Disease Control and Prevention*. Retrieved November 10, 2021, from https://www.cdc.gov/learnmorefeelbetter/sme/index.htm.

Centers for Disease Control and Prevention (CDC). (2011, February). Cognitive impairment: A call for action, now! *Centers for Disease Control and Prevention.* Retrieved November 10, 2021, from https://www.cdc.gov/aging/pdf/cognitive_impairment/cogimp_poilicy_final.pdf.

Fryer, C. E., Luker, J. A., McDonnell, M. N., & Hillier, S. L. (2016). Self management programmes for quality of life in people with stroke. *The Cochrane database of systematic reviews*, 2016(8), CD010442.

https://doi.org/10.1002/14651858.CD010442.pub2

Ge J, Li R, Yuan P, et al. (2020). Serum tissue inhibitor of metalloproteinase-1 and risk of cognitive impairment after acute ischaemic stroke. J Cell Mol Med. 24, 7470–7478. https://doi.org/10.1111/jcmm.15369

Kalaria, R. N., Akinyemi, R., & Ihara, M. (2016). Stroke injury, cognitive impairment and vascular dementia. *Biochimica et biophysica acta*, 1862(5), 915–925.

https://doi.org/10.1016/j.bbadis.2016.01.015

Kidd, L., Lawrence, M., Booth, J., Rowat, A., & Russell, S. (2015). Development and evaluation of a nurse-led, tailored stroke self-management intervention. *BMC health services research*, 15, 359. https://doi.org/10.1186/s12913-015-1021-y

Lorenzl, S., De Pasquale, G, Segal, A.Z., Beal, M.F. (2003). Dysregulation of the levels of matrix metalloproteinases and tissue inhibitors of matrix metalloproteinases in the early phase of cerebral ischemia. Stroke. 34, e37-e38.

Mayo Clinic (2021, February 9). Stroke. *Mayo Foundation for Medical Education and Research*. Retrieved November 10, 2021, from
https://www.mayoclinic.org/diseases-conditions/stroke/symptoms-causes/syc-20350113#:~:text=Ischemic%20 stroke%20 occurs%20when%20a,most%20 common%20type%20of%20stroke.

Merriman, N. A., Sexton, E., McCabe, G., Walsh, M. E., Rohde, D., Gorman, A., Jeffares, I., Donnelly, N. A., Pender, N., Williams, D. J., Horgan, F., Doyle, F., Wren, M. A., Bennett, K. E., & Hickey, A. (2019). Addressing cognitive impairment following stroke: systematic review and meta-analysis of non-randomised controlled studies of psychological interventions. *BMJ open*, 9(2), e024429. https://doi.org/10.1136/bmjopen-2018-024429

National Institute of Aging (2020). Cognitive health and older adults. *National Institute of Health. United States Department of Health & Human Services.*
https://www.nia.nih.gov/health/cognitive-health-and-older-adults

Oberlin, L. E., Waiwood, A. M., Cumming, T. B., Marsland, A. L., Bernhardt, J., & Erickson, K. I. (2017). Effects of Physical Activity on Poststroke Cognitive Function: A Meta-Analysis of Randomized Controlled Trials. *Stroke*, 48(11), 3093–3100.. https://doi.org/10.1161/STROKEAHA.117.017319

Perry, W., Lacritz, L., Roebuck-Spencer, T., Silver, C., Denney, R. L., Meyers, J., McConnel, C. E., Pliskin, N., Adler, D., Alban, C., Bondi, M., Braun, M., Cagigas, X., Daven, M., Drozdick, L., Foster, N. L., Hwang, U., Ivey, L., Iverson, G., Kramer, J., … Golden, T. (2018). Population Health Solutions for Assessing Cognitive Impairment in Geriatric Patients. *Archives of clinical neuropsychology : the official journal of the National Academy of Neuropsychologists*, 33(6), 655–675. https://doi.org/10.1093/arclin/acy052

Yeh, T. T., Wu, C. Y., Hsieh, Y. W., Chang, K. C., Lee, L. C., Hung, J. W., Lin, K. C., Teng, C. H., & Liao, Y. H. (2017). Synergistic effects of aerobic exercise and cognitive training on cognition, physiological markers, daily function, and quality of life in stroke survivors with cognitive decline: study protocol for a randomized controlled trial. *Trials*, 18(1), 405. https://doi.org/10.1186/s13063-017-2153-7

Younas, A., & Sommer, J. (2015). Integrating Nursing Theory and Process Into Practice; Virginia Henderson's Need Theory. *International Journal of Care Sciences*. Retrieved November 8, 2021, from http://www.internationaljournalofcaringsciences.org/docs/23_ahtisham.pdf.

Zuo, L., Dong, Y., Zhu, R., Jin, Z., Li, Z., Wang, Y., Zhao, X., Sachdev, P., Zhang, W., & Wang, Y. (2016). Screening for cognitive impairment with the Montreal Cognitive Assessment in Chinese patients with acute mild stroke and transient ischaemic attack: a validation study. *BMJ open*, 6(7), e011310. https://doi.org/10.1136/bmjopen-2016-011310

Appendix: Literature Review Table

Authors / Citation	Purpose / Objective of Study	Sample - Population of interest	Study Design	Study Methods	Major Finding(s)	Strengths	Limitations
Brady, M. C., Kelly, H., Godwin, J., Enderby, P., & Campbell, P. (2016). Speech and language therapy for aphasia following stroke. The Cochrane database of systematic reviews, 2016(6), CD000425. https://doi.org/10.1002/14651858.CD000425.pub4	To assess the effects of speech and language therapy (SLT) for aphasia following stroke.	57 studies involving 3002 participants with aphasia; reviewed all SLT types, regimens, and methods of delivery.	Systematic Review of randomized controlled trials	Randomised controlled trials comparing SLT vs. no SLT; social support or stimulation; or another SLT intervention (difference in duration, intensity, frequency, methodology)	Study provides evidence of the effectiveness of SLT for people with aphasia following stroke in terms of improved functional communication, reading, writing, and expressive language compared with no therapy. Therapy at high intensity, high dose, or over a longer period may be beneficial	Including different types and variations of SLT for the participants really emphasized its effectiveness for those with aphasia.	Key quality features were only reported by half of the latest trials, unclear whether it was a result of poorly conducted studies or poorly reported studies.

Fryer, C. E., Luker, J. A., McDonnell, M. N., & Hillier, S. L. (2016). Self management programmes for quality of life in people with stroke. The Cochrane database of systematic reviews, 2016(8), CD010442. https://doi.org/10.1002/14651858.CD010442.pub2	To assess the effects of self management interventions on the quality of adults with stroke who are living in the community, compared with inactive or active (usual care) control interventions.	1863 participants; studies of adults (18+ yrs and older) with stroke living in the community who received self-management interventions	Meta-analysis and systematic review; Randomized controlled trials	14 studies involving 1863 participants that looked at the benefits of the management programs for people with stroke; conducted in a variety of countries in a variety of formats (groups, individually), and varying time periods.	Self-management interventions were effective in improving quality of life.	Study tested across many different types of participants, no bias	Highly variable results since the study was done in various countries, over a large group of participants with a huge age range, and various genders.
Ge, J., Li, R., Yuan, P., Che, B., Bu, X., Shao, H., Xu, T., Ju, Z., Zhang, J., Zhang, Y., & Zhong, C. (2020). Serum tissue inhibitor of metalloproteinase-1 and risk of cognitive impairment after acute ischaemic stroke. Journal of cellular and molecular medicine, 24(13), 7470–7478. https://doi.org/10.1111/jcmm.15369	Purpose was to prospectively investigate the relationship between serum TIMP-1 with post-stroke cognitive impairment	598 ischemic stroke patients from seven participating hospitals were included.	Meta-analysis; randomized controlled trial	Patients were assessed based on fasting blood samples, blood pressures, the use of the Mini-Mental State Examination and the Montreal Cognitive Assessment at 3 months of being a part of the study	When the participants were assessed, 316 of the 598 included had cognitive impairment after 3 months. The study found an association between higher TIMP-1 levels and the cognitive impairment rate	The study demonstrated the importance of testing biomarkers in order to identify and diagnose cognitive function deficits following a stroke.	The study was done on patients in China, so the findings may not be able to be applied across different populations.

Kidd, L., Lawrence, M., Booth, J., Rowat, A., & Russell, S. (2015). Development and evaluation of a nurse-led, tailored stroke self-management intervention. *BMC health services research*, 15, 359. https://doi.org/10.1186/s12913-015-1021-y	To develop a stroke self-management intervention that could be tailored towards stroke survivors' self-management needs, goals and levels of activation, in the first year post-stroke.	26 stroke survivors, 3-12 months post stroke 16 stroke nurses	Mixed methods, Quantitative and Qualitative Study	Nurses and stroke survivors work in partnership using a structured self-management assessment questionnaire (The PAM) and a process of goal-setting. Figure 1 depicts the intervention elements and processes.	Majority of participants (n = 17, 85 %) reported high scores on the PAM, the individual narratives from the interviews often suggested that individuals did not necessarily perceive themselves as having responsibility for, and confidence and knowledge to engage in, their self-management, particularly in times of stress, illness or anxiety . This finding highlights that specific needs are perhaps not being addressed, and would be missed if nursing input was guided only by the total PAM score/activation scale.	One of the first studies to include both stroke patients and nurses in development of intervention plans and support for a community setting.	Inadequate documentation of the success of the interventions; only included a small sample size of stroke survivors and nurses so high possibility of bias and the results cannot be applied for the whole population.
Oberlin, L. E., Waiwood, A. M., Cumming, T. B.,	Evaluate the effects of	736 participants	Randomized controlled	Studies selected with following	Significant positive effect of	Successful in testing various	Information on allocation

Marsland, A. L., Bernhardt, J., & Erickson, K. I. (2017). Effects of Physical Activity on Poststroke Cognitive Function: A Meta-Analysis of Randomized Controlled Trials. Stroke, 48(11), 3093–3100. https://doi.org/10.1161/STROKEAHA.117.017319	physical activity (PA) training on cognitive function poststroke and identify intervention and sample characteristics that may moderate treatment effects.	who were stroke survivors	trials examining the association between structured PA training and cognitive performance post stroke	criteria: (1) recruitment of stroke survivors 18 years or older, (2) randomized controlled trials that included a clearly defined control condition and an experimental condition that included a component aimed to increase PA, (3) duration of training over 4 weeks, (4) included a validated neuropsychological test of cognition with data reported at baseline and post intervention.	PA training on cognition post stroke with small to moderate treatment effects apparent even in the chronic stroke phases.	PA methodologies	concealment was not reported in 50%, and blinding of participants and study assessors was not reported in 57% and 21% of trials
Zuo, L., Dong, Y., Zhu, R., Jin, Z., Li, Z., Wang, Y., Zhao, X., Sachdev, P., Zhang, W., & Wang, Y. (2016). Screening for cognitive impairment with the Montreal Cognitive Assessment in Chinese patients with acute mild stroke and transient ischaemic attack: a validation study. BMJ	Establish the cut-off point of the Montreal Cognitive Assessment (MoCA-Beijing) in screening for cognitive impairment within 2 weeks of mild stroke	80 acute mild ischaemic stroke patients and 22 TIA patients were recruited	Non-randomized controlled trial	Non-randomized controlled trial where A formal battery of neuropsychological tests in line with the National Institute of Neurological Disorders and Stroke and the Canadian Stroke	More than half of the sample had cognitive impairment as determined by the formal battery of neuropsychological tests.	Established the cut-off point of a cognitive screening instrument (Montreal Cognitive Assessment (MoCA)-Beijing) against a 'gold standard' neuropsychologi	Small, controlled, non-randomized sample size, high risk for bias

open, 6(7), e011310. https://doi.org/10.1136/bmj open-2016-011310	or transient ischaemic attack (TIA)			Network neurocognitive harmonisation standards were included to establish CI.		cal evaluation in Chinese patients with mild stroke and transient ischemic attack within 2 weeks after index cerebrovascular event	