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Stroke Depression and Rehabilitation Willingness: Benchmark Study

India J. Lewis

University of Texas at Tyler, ILewis2@patriots.uttyler.edu

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Stroke Depression and Rehabilitation Willingness Benchmark Study

A paper Submitted in Partial Fulfillment of the Requirements

For NURS 5382: Capstone

In the School of Nursing

The University of Texas at Tyler

By

India Lewis

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The development of this project would not be possible without the help of several people who have given me the encouragement to stay positive and continue until the end. This would not have been possible without my family, their love and support is what has gotten me through some of the most stressful times. My daughter, Iyla has been that ray of sunshine that I have needed to keep going. My two colleagues, Shavon Williams and Wandria Dallas, who have been a listening ear and great mentors during the development of this project. I am grateful to Dr. Jones for her understanding and support and Dr. Greer for her encouraging words and her confidence in my abilities. This has been a rewarding journey full of opportunities that will stay with me for a lifetime.

Executive Summary

Acute Ischemic Stroke accounts for 70% of all strokes globally with greater than 80% in the United States alone (Phipps & Cronin, 2020). The prevalence of stroke has increased the need for education, awareness, and improvements in assessment skills. Post-stroke depression (PSD) is a common complication of stroke and the inclusion of a depression screening tool for every stroke patient can improve overall outcomes. One-third of all stroke patients experience depression and it is associated with a deficiency in functional outcomes (Towfighi et al., 2017). A stroke depression screening tool is used to assess stroke patients and their feelings, focusing on questions that identify major depressive symptoms. The goal of this tool is to identify and treat patients as soon as possible, to increase functional outcomes and decrease the likelihood of hospital readmission related to worsening deficits. The Patient Health Questionnaire-9 (PHQ-9) is a high sensitivity screening tool recognized for its ability to assess for post-stroke depression (Dajapratham et al., 2020). Research has shown that this nine-question questionnaire uses the major depressive disorder criteria for diagnosis (Dajapratham et al., 2020). Although depression can manifest itself at any point during a patients' progress early detection is suggested for prompt treatment and to prevent poor functional outcomes (Karamchandani et al., 2015).

At Ochsner LSU Health Shreveport (OLSH), the only mental health screening currently used is a suicide risk screening that is asked during triage in the emergency department or during a direct floor admission. Treatment that follows a depression screening can change the trajectory of stroke care and improve the patients' rehabilitation participation. An appropriate depression screening tool could introduce the patient to early interventions for PSD. Depression influences rehabilitation potential and functional recovery (Harris et al., 2017). As the diagnosis of stroke continues to rise, there may also be a rise in depression.

The goal of this benchmark project is to assess, identify and treat the depressive symptoms of patients with deficits following a stroke. The PHQ-9 questionnaire tool for assessment will be integrated into electronic health record. Once the tool is approved by the Epic inpatient documentation council it will be available to inpatient nursing staff to use for every patient with an admission diagnosis of stroke. Education will be a critical piece of the questionnaire implementation and an ongoing process. Ochsner LSU Health Shreveport's stroke team continues to report increases in stroke patient volume, this increase ignites the need to introduce and implement this project quickly and efficiently.

Rationale for the Project

Physical deficits following stroke tend to be the focus of treatment; although physical deficits are important, it is also important to acknowledge the psychological comorbidities that can be associated with this disease process (Vermeer et al., 2018). Experiencing a stroke is devastating to patients and their caregivers. It is the responsibility of the nurses and physicians to be proactive when it comes to awareness and assessment of significant mood changes. These mood changes may affect a patient's ability to perform activities of daily living (ADLs). Post-stroke depression implications have been overlooked, ignored, and underestimated (Dar et al., 2017).

Patients that experience mental health concerns post-stroke need to be assessed early in order to be provided with appropriate treatment (Meng et al., 2017). The process of assessment is solely based on the diagnosis of acute ischemic stroke on hospital admission. Each patient needs access to the same assessment screening tool for continuity of care. The PHQ-9 and EHR integration is key to the successful execution of the screening tool (McIntosh, 2017). Patients at a certified stroke facility should have confidence that every

possible avenue has been pursued to evaluate their symptoms. During unit admission screenings identify the need for intervention sooner within the patient care process. This PHQ-9 questionnaire is to detect depression in patients who otherwise may not be identified until much later in their hospital stay (Levis et al., 2019). The standard cut for this nine-item questionnaire is 10 or greater, the cutoff number represents a significant possibility of major depressive symptoms (Levis et al., 2019).

At Ochsner LSU Health, each patient admitted to the facility will receive a standard rehabilitation assessment from a physical therapist and an occupational therapist. The multidisciplinary approach to stroke patient care is beneficial to the patients' recovery status. After a patient receives an assessment it will be the nurses' responsibility to ascertain and report the depression screening findings to the physical therapist, the admitting physician and consult the psychiatrist if appropriate. For optimal recovery results, the team members will properly treat the depression symptoms while admitted as an inpatient before home discharge or to an inpatient rehabilitation facility. Stroke depression and its effects on rehabilitation is not widely addressed, this project will bring these much-needed discussions to the forefront of stroke patient care.

Literature Synthesis

During a review of literature twelve articles were found to have relevance and support of the benchmark project, 3 cohort studies, 1 retrospective review, 1 quality improvement review, 1 integrative review, 1 systematic review, 2 cross-sectional studies, 1 descriptive study, 1 meta-analysis, and 1 case-control study. These articles support the theme of the project and the benefits this project will have for the patients and the future of stroke care. The common findings in the research that support the change project are awareness,

effectiveness, and reliability. The quality improvement project on depression screening noted that implementation of the depression screening protocol increased the nurses' general awareness and objective observation (McIntosh, 2017). Nurses are at the forefront of care and are typically first to notice PSD, therefore it is critical that early identification and intervention, through the utilization of the screening tool at unit admission it initiated (Babkair, 2017; McIntosh, 2017). PSD is a regular occurrence in patients diagnosed with acute ischemic stroke; a common mental health disease, depression is frequently associated with impairments to functional outcome (Babkair, 2017; Dar et al., 2017; McIntosh, 2017). Although depression is a frequent occurrence after stroke, the research has shown that there is a need for patient-appropriate assessment screening tools. Karamchandani et al. (2015), McIntosh (2017), and Selvaraj et al. (2021) found that in hospitalized patients there was a strong correlation between evidence-based screening and functional improvements from early detection. Providing staff with an easy-to-understand and easy-to-use screening offers more staff cooperation.

Several studies found that the use of the PHQ-9 as the screening tool detected a consistent higher "sensitivity of 88% and 88% specificity prediction" for major depression (Dajapratham et al., 2020; McIntosh, 2017; Towfighi et al., 2017). The PHQ-9 has a strong predictive value for distinguishing between patients with and without major depressive symptoms (Vermeer et al., 2017). Although the PHQ-9 is not used for diagnosis it assists in further assessing patients for possible treatments of depressive disorders. Screenings with a cut-off score of 5 yielded minimal depression; inconsistencies in cut-off scores demonstrated a larger variability in depression (McIntosh, 2017; Vermeer et al., 2017). PSD and functional outcome yielded mixed results relating to the overall effects depression has on rehabilitation

versus results that conclude a significant relevance between depression and rehabilitation performance (Babkir, 2017; Sharma et al, 2021; Zhao et al., 2018).

Kapoor et al. (2018) found that 30-50% of stroke patients may have limited functional outcomes due to depression. “Rehabilitation potential and functional outcomes are influenced by depression” (Harris et al., 2017, p. 2). Torrisi et al. (2018) suggest that unrealistic rehabilitation expectations affected mood following a stroke and was a dominating factor for a positive outcome. Psychiatric consults were administered to more than half of the stroke patients that were found to be experiencing PSD through early screening; rehabilitation is gear toward the thought that lost cognitive abilities will be recovered and influenced by the patients’ willingness to rehabilitate (Amaricai & Poenaru, 2016; Ezekiel et al., 2019; Harris et al., 2017). Treatment for PSD varies facility and physician wide. According to Zhao et al. (2018), as soon as a patient is diagnosed with PSD the patient should be treated with an antidepressant based on presenting factors. Overall consensus suggest the importance of identifying PSD and the common aspects associated with poor functional outcomes (Amaricai & Poenaru, 2016; Ezema et al., 2019; Selvaraj et al., 2021; Ezekiel et al., 2019; Sharma et al., 2021).

Project Stakeholders

Stakeholders for this implementation project are patients, family members, physicians, mid-level providers, and nurses. The administrative leaders are also key to the approval of the project. A patients’ overall recovery is dependent on the assessment and follow-through of the physicians, mid-level providers, and staff nurses. The facility is certified in stroke care; therefore, the patient should expect optimal evidence-based care that provides them with a positive outcome on discharge. The patients’ caregivers also have a vital role in depression

identification and treatment. Ensuring the evidence-based process involves the use of the best current evidence to assist in making patient care decisions (Melnyk & Fineout-Overholt, 2015). Patient care is anticipated to be thoughtful, accurate, and professional. Since nurses will be the driving force behind the depression screening tool implementation their awareness, identification, and report of the risk factors during early stages is critical to the projects' success (Babkir, 2017). Since the tool will be integrated into the EHR and directly affect the nurses, the screening protocols will be re-evaluated based on nursing input. Nursing input is vital to the sustainability of the project.

Implementation Plan

New projects are sure to experience challenges along the implementation process, and acknowledgment of this possibility is imperative to success. Determining possible problems is the first step to any projects' successful implementation. Initiating a team of individuals that will lead the change, encourage the change, and continue to endorse the change is important for the foundation of the project. It is important to immediately establish an evidence-based change model with the team, this assists in creating clear guidelines and goals for seamless execution. Changes in practice should be led by models developed to organize the approaches to change and the thinking process (Dang et al., 2015). Second, once the stroke unit is fully staffed and open, nurses will be assigned the PHQ-9 on the hospital's online learning network (OLN) this learning tool will be used to teach each nurse how to perform the screening. Upon approval of the PHQ-9's by the EHR implementation team, the questionnaire will be added to EPIC. Once stroke patients are admitted to the newly opened stroke unit, each patient will be assessed for depression.

Ochsner LSU Health Shreveport uses the Plan-Do-Study-Act (PDSA) as an implementation model. The PDSA is a four-stage cycle using action-oriented learning and the scientific method (Stevens, 2015). The planning phase demonstrates how the depression screening tool will benefit the patients. The project's team will include stroke physicians, staff nurses, stroke nurses practitioners, the stroke hospital educator, stroke unit nurse managers, and physical and occupational therapists. This team will have monthly meetings to discuss accomplishments and areas that may need improvements. The do phase includes a small-scale implementation of the project; the success of the project will be examined through the reporting of patients that are positive for depression based on the screening tool along with a matching psychiatric consultation. The study phase examines the analysis through reports that will specifically identify the need for changes to the project. This analysis will direct future corrections and goal adjustments. The recommendations for patients to be treated for depression will be compared to physical and occupational therapist reports of the patients abilities.

Timetable/Flowchart

The hospital administration is committed to re-opening the stroke unit. Each aspect of the timeline will be based on the opening. See Flowchart Appendix C

- The goal is for a Spring 2022 opening of 12 to 14 beds, two of which will be intensive care beds. These beds will be used for the small-scale implementation.
- Implementation of depression screening tool into the EHR on unit opening day
- During the orientation process for the nurses hired for the unit, the education for the depression screening tool will be introduced. Each nurse will be required to complete the education within 1 week of hire.

- By week two of re-opening, every patient admitted to the stroke unit should be assessed for depression screening
- Week 3, individual reports will be analyzed for missed screening tools, re-education will occur
- At the 1-month mark comparison of discharged patients who received rehabilitation and depression treatment will be assessed. An accurate count of patients will be needed to understand future requirements
- Re-evaluation of the stroke patients' needs and possible adjustments to the plan will be ongoing.
- Actual dates pending

Data Collection/Evaluation Plan

- ❖ Add the PHQ-9 to the electronic health record for use by staff
 - Generate questionnaire specific report to obtain results of the screening tool
- ❖ Obtain psychiatric consult reports for stroke patients discharged to a rehabilitation facility
- ❖ Compare rehabilitation progress of patients treated for depression vs. patients who were positive for depression but refused psychiatric treatment and rehabilitation
 - The comparison of these two factors will be the tool used to evaluate the success of the screening implementation.
- ❖ Incorporate the PDSA to assist with changes that will need to be made to the project

Cost/Benefit

Currently, there is no specific cost associated with this project implementation. The staff education will be required as online training and will not require over time. Online education at Ochsner LSU Health Shreveport is typically disseminated through an online learning system. This education course will be a 30-minute module, with 5 questions at the end of the module to assess understanding of learned skills.

One of the most beneficial aspects of this project will be the goal of reduced readmission resulting from improved rehabilitation. Readmission related to untreated PSD from a lack of rehabilitation can cause a major incumbrance to a facility's available resources. Hospital readmissions have a significant correlation to depression (Ottenbacher et al., 2012). 30–90-day hospital readmissions are more prevalent when the patient does not receive rehabilitation therapy as compared to patients that receive even low-intensity rehabilitation therapy (Andrews et al., 2015). "Patients with better motor and cognitive abilities at rehabilitation discharge were less likely to be re-hospitalized, whereas those reporting more depressive symptoms were more likely to be re-hospitalized" (Ottenbacher et al., 2012, p. 877). Further research regarding the cost specifically associated with stroke, depression and rehabilitations effects on readmission will be performed.

Discussion of Results

Caring for stroke patients requires continual assessments and planning. This benchmark project will aim at identifying depression; a consequence of stroke, which can affect both the patients' future activities of daily living as well as the organization's stroke readmission rates. PSD awareness may be the catalyst to encourage more facilities to include a depression

screening tool into the standard of care. Clinical identification through awareness can facilitate early intervention to enhance rehabilitation recovery (Babkair, 2017). Patients can benefit from facilities incorporating a PHQ-9 questionnaire into current stroke measures and guidelines. The standardization of depression treatment can improve rehabilitation abilities and efforts, therefore improving overall function outcomes.

Conclusion/Recommendations

The ultimate goal is to routinely assess hospitalized stroke patients for depression (Karamchandani et al., 2015). The community strives to promote stroke prevention by understanding risk factors through access to education. Education is imperative for patients that have experienced an acute ischemic infarct. As a result of stroke, PSD is a condition that has not been widely discussed within the healthcare field. Acknowledgment of how common depression affects stroke recovery is key to improvements in functional outcomes. The administration's awareness and possible financial benefits for the facility can close the gap to the uninformed. Quality of life may be improved with the recurrent re-evaluation of evidence-based depression screening protocols. This implementation will produce data that can support depression and other mental health screenings for multiple disease processes in the future. There needs to be a continuous evaluation of the evidence-based depression and treatment screening tool for improvements of how screenings may assist to increase rehabilitation participation willingness.

References

- Amaricai, E. & Poenaru, D. V. (2016). The post-stroke depression and its impact on functioning in young and adult stroke patients of a rehabilitation unit. *Journal of Mental Health* 25(2), 137-141. doi: 10.3109/09638237.2015.1022251
- Babkair, L. A. (2017). Risk factors for poststroke depression: An integrative review. *American Association of Neuroscience Nurses*, 49(2), 73-83.
<https://doi.org/10.1097/JNN0000000000000271>
- Ezekiel, L., Collett, J., Mayo, N. E., Pang, L., Field, L., & Dawes, H. (2018). Factors associated with participation in life situations for adults with stroke: a systemic review. *Archives of Physical Medicine and Rehabilitation*, 100, 945-955.
<https://doi.org/10.1016/j.apmr.2018.06.017>
- Ezema, C. I., Akusoba, P. C., Nweke, M. C., Uchewoke, C. U., Agono, J., & Usoro, G. (2018). Influence of post-stroke depression on functional independence in activities of daily living. *Ethiop Journal Health Science* 29(1), 841-846.
- Dajpratham, P., Pukrittayakamee, P., Atsariyasing, W., Wannarit, K., Boonhong, J., & Pongpirul, K. (2020). The validity and reliability of the PHQ-9 in screening for post-stroke depression. *BMC Psychiatry*, 20(291), 1-8. <https://doi.org/10.1186/s12888-020-02699-6>
- Dang, D., Melnyk, B. M., Fineout-Overholt, E., Ciliska, D., DiCenso, A., Cullen, L., Cvach, M., Larrabee, J. H., Rycroft-Malone, J., Schultz, A. A., Stetler, C. B., & Stevens, K. R. (2015). Models to guide implementation and sustainability of evidence-based practice. In B. M. Melnyk & E. Fineout-Overholt (Eds.). *Evidence-based practice in nursing & healthcare: A guide to best practice* (3rd ed., pp. 274-315). Wolters Kluwer.

- Dar, S. K., Venigalla, H., Khan, A. M., Ahmed, R., Mekala, H. M., Zain, H., & Shagufta, S. (2017). Post stroke depression frequently overlooked, undiagnosed, untreated. *Neuropsychiatry*, 7(6), 906-919
- Harris G. H., Collins-McNeil, J., Yang, Q., Nguyen, V. Q. C., Hirsch, M. A., Rhoads, C. F., Guerrier, T., Thomas, J. G., Pugh T. M., Hamm, D. (2017). Depression and functional status among African American stroke survivors in inpatient rehabilitation. *Journal of Stroke Cerebrovascular Disease*, 26(1) 116-124.
doi:10.1016/j.strokecerebrovasdis.2016.08.039
- Kapoor, A., Lanctot, K. L., Bayley, M., Herrmann, N., Murray, B. J., & Swartz, R. H. (2019). Screening for post-stroke depression and cognitive impairment at baseline predicts long-term patient-centered outcomes after stroke. *Journal of Geriatric Psychiatry and Neurology*, 32(1), 40-48. <https://doi.org/10.1177/0891988718819859>
- Karamchandani, R.R., Vahidy, F., Bajgur, S., Vu, K. Y. T., Choi, H. A., Hamilton, R. K., Rahbar, M. H., & Savitz, S. I. (2015). Early depression screening is feasible in hospitalized stroke patients. *PLoS ONE* 10(6), 1-11. doi: 10.1371/journal.pone.0128246
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a brief depression severity measure. *J. Gen Intern Med*, 16(9), 606-613. doi:10.1046/j.1525-1497.2001.016009606.x [sample of PHQ-9]
- Levis, B., Benedetti, A., & Thombs, B. D. (2019). Accuracy of patient health questionnaire (PHQ-9) for screening to detect major depression: individual participant data meta-analysis. *BMJ*, 365, 1-11. <http://dx.doi.org/10.1136/bmj.11476>

- McIntosh, C. (2017). A depression screening tool protocol for patients with acute stroke: A quality improvement project. *American Association of Neuroscience Nurses* 49(1), 39-47. <https://doi.org/10.1097/JNN.0000000000000231>
- Meng, G., Ma, X., Li, L., Tan, Y., Liu, X., Liu, X., & Zhao, Y. (2017). Predictors of early-onset post-ischemic stroke depression: a cross sectional study. *BMC Neurology*, 17(199), 1-8 doi: 10.1186/s12883-017-0980-5
- Phipps, M. S., & Cronin, C. A. (2020). Management of acute ischemic stroke. *BMJ*, 368, 1-15. <http://dx.doi.org/10.1136/bmj.l6983>
- Sharma, G. S., Gupta, A., Khanna, M., & Prakash, N. B. (2021). Post-stroke depression and its effects on functional outcomes during inpatient rehabilitation. *Journal of Neurosciences in Rural Practice*, 12, 543-549. <https://doi.org/10.1055/s-0041-1731958>
- Stevens, K. R. (2015). Critically appraising knowledge for clinical decision making. In B. M. Melnyk & E. Fineout-Overholt (Eds.). *Evidence-based practice in nursing & healthcare: A guide to best practice* (3rd ed., pp. 77-86). Wolters Kluwer.
- Torrisi, M., De Cola, M. C., Buda, A., Carioti, L., Scaltrito, M. V., Bramanti, P., Manuli, A., De Luca, R., & Caladrò, R. S. (2018). Self-efficacy, poststroke depression, and rehabilitation outcomes: Is there a correlation? *Journal of Stroke and Cerebrovascular Disease* 27(11), 3208-3211. <https://doi.org/10.1016/j.jstrokecerebrovasdis.2018.07.021>
- Towfighi, A., Ovbiagele, B., Hussein, N. E., Hackett, M. L., Jorge, R. E., Kissela, B. M., Mitchell, P. H., Skolarus, L. E., Whooley, M. A., & Williams, L. S. (2017). Poststroke depression: A scientific statement for healthcare professionals from the American Heart Association/ American Stroke Association. *Stroke*, 40, 30-43. doi: 10.1161/STR.0000000000000113

Vermeer, J., McIntyre, A., Janzen, S., Rice, D., Allen, L., Ure, D., & Teasell, R. (2018).

Depressive symptoms in individuals after stroke in home-based rehabilitation setting.

Neurology Research International 2018, 1-8 doi: 10.1155/2018/1621830

Zhao, F. -Y., Yue, Y. -Y., Li, L., Lang, S. -Y., Wang, M. -W., Du, X. -D., Deng, Y. -L., Wu, A. -

Q., & Yuan, Y. -G. (2018). Clinical practice guidelines for post-stroke depression in

China. *Brazilian Journal of Psychiatry* 40(3), 325-334. [https://doi.org/10.1590/1516-](https://doi.org/10.1590/1516-4446-2017-2343)

[4446-2017-2343](https://doi.org/10.1590/1516-4446-2017-2343)

Appendix A

Evaluation Table Template

PICOT Question: In patients with physical deficits following acute ischemic stroke (P) how does the use of a post-stroke depression (PSD) screening protocol at admission (I) compared to no protocol I affect PSD treatment and rehabilitation willingness (O) before discharge (T)?

PICOT Question Type (Circle): **Intervention** Etiology Diagnosis or Diagnostic Test Prognosis/Prediction Meaning

Caveats

- 1) The **only studies** you should put in these tables are the ones that **you know answer your question** after you have done the modified rapid critical appraisal (i.e., the keeper studies).
- 2) Include APA reference
- 3) Use abbreviations & create **a legend** for readers & yourself
- 4) Keep your descriptions brief – there should be **NO complete sentences**
- 5) This evaluation is for the purpose of knowing your studies to synthesize.

Place your APA References here (Use correct APA reference format including the hanging indentation):

References

Karamchandani, R.R., Vahidy, F., Bajgur, S., Vu, K. Y. T., Choi, H. A., Hamilton, R. K., Rahbar, M. H., & Savitz, S. I. (2015). Early depression screening is feasible in hospitalized stroke patients. *PloS ONE* 10(6), 1-11. Doi: 10.1371/journal.pone.0128246

Vermeer, J., McIntyre, A., Janzen, S., Rice, D., Allen, L., Ure, D., & Teasell, R. (2018). Depressive symptoms in individuals after stroke in home-based rehabilitation setting. *Neurology Research International* 2018, 1-8 doi: 10.1155/2018/1621830

McIntosh, C. (2017). A depression screening tool protocol for patients with acute stroke: A quality improvement project. *American Association of Neuroscience Nurses* 49(1), 39-47. <https://doi.org/10.1097/JNN.0000000000000231>

- Kapoor, A., Lanctot, K. L., Bayley, M., Herrmann, N., Murray, B. J., & Swartz, R. H. (2019). Screening for post-stroke depression and cognitive impairment at baseline predicts long-term patient-centered outcomes after stroke. *Journal of Geriatric Psychiatry and Neurology*, 32(1), 40-48. <https://doi.org/10.1177/0891988718819859>
- Babkair, L. A. (2017). Risk factors for poststroke depression: An integrative review. *American Association of Neuroscience Nurses*, 49(2), 73-83. <https://doi.org/10.1097/JNN0000000000000271>
- Zhao, F. -Y., Yue, Y. -Y., Li, L., Lang, S. -Y., Wang, M. -W., Du, X. -D., Deng, Y. -L., Wu, A. -Q., & Yuan, Y. -G. (2018). Clinical practice guidelines for post-stroke depression in China. *Brazilian Journal of Psychiatry* 40(3), 325-334. <https://doi.org/10.1590/1516-4446-2017-2343>
- Ezema, C. I., Akusoba, P. C., Nweke, M. C., Uchewoke, C. U., Agono, J., & Usoro, G. (2018). Influence of post-stroke depression on functional independence in Activities of daily living. *Ethiopian Journal Health Science* 29(1), 841-846.
- Amaricai, E. & Poenaru, D. V. (2016). The post-stroke depression and its impact on functioning in young and adult stroke patients of a rehabilitation unit. *Journal of Mental Health* 25(2), 137-141. Doi: 10.3109/09638237.2015.1022251
- Torrison, M., De Cola, M. C., Buda, A., Carioti, L., Scaltrito, M. V., Bramanti, P., Manuli, A., De Luca, R., & Caladrò, R. S. (2018). Self-efficacy, poststroke depression, and rehabilitation outcomes: Is there a correlation? *Journal of Stroke and Cerebrovascular Disease* 27(11), 3208-3211. <https://doi.org/10.1016/j.jstrokecerebrovasdis.2018.07.021>
- Harris G. H., Collins-McNeil, J., Yang, Q., Nguyen, V. Q. C., Hirsch, M. A., Rhoads, C. F., Guerrier, T., Thomas, J. G., Pugh T. M., Hamm, D. (2017). Depression and functional status among African American stroke survivors in inpatient rehabilitation. *Journal of Stroke Cerebrovascular Disease*, 26(1) 116-124. Doi:10.1016/j.jstrokecerebrovasdis.2016.08.039
- Ezekiel, L., Collett, J., Mayo, N. E., Pang, L., Field, L., & Dawes, H. (2018). Factors associated with participation in life situations for adults with stroke: a systemic review. *Archives of Physical Medicine and Rehabilitation*, 100, 945-9555. <https://doi.org/10.1016/j.apmr.2018.06.017>
- Sharma, G. S., Gupta, A., Khanna, M., & Prakash, N. B. (2021). Post-stroke depression and its effects on functional outcomes during inpatient rehabilitation. *Journal of Neurosciences in Rural Practice*, 12, 543-549. <https://doi.org/10.1055/s-0041-1731958>

Citation: (i.e., author(s), date of publication, & title)	Conceptual Framework	Design/Method	Sample/Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Strength of the Evidence (i.e., level of evidence + quality [study strengths and weaknesses])
Author, Year, Title	Theoretical basis for study Qualitative Tradition		Number, Characteristics of the sample (not Inclusion/exclusion criteria), Attrition rate & why?	Independent variables (e.g., IV1 = IV2 =) Dependent variables (e.g., DV =)	What scales were used to measure the outcome variables (e.g., name of scale, author, reliability info [e.g., Cronbach alphas])	What methods were used to answer the clinical question (i.e., all stats do not need to be put into the table)	Statistical findings (i.e., for every statistical test you have in the data analysis column, you should have a finding) or qualitative findings (themes and subthemes)	<ul style="list-style-type: none"> • Strengths and limitations of the study (Consider the validity of the study and/or flaws in the method not just what is stated as limitations) • Risk of harm if study intervention or findings implemented • Feasibility of use in your practice • Remember: level of evidence (See Melnyk & Fineout-Overholt handout) + quality of evidence = strength of evidence & confidence to act • Use the USPSTF grading schema http://www.ahrq.gov/clinic/3rduspstf/ratings.htm
								<p>Strengths:</p> <p>Limitations:</p> <p>Risk of harm:</p> <p>Feasibility:</p> <p>Level of evidence for the PICOT question type:</p> <p>Quality of the evidence</p> <p>USPSTF: Grade: Level of Certainty:</p>
Article #1 Karamchandi et al. (2015). Early depression screening is	none	Quantitative Cohort predictive	Pt admitted with stroke dx n=303 Total eligible n= 211 IS= 148	• IV= diagnosis of IS DV= diagnosis of ICH stroke	Depression screening questionnaire MPHQ-9, NIHSS, mRS,	Descriptive statistics, univariable and multivariable	Younger age (OR 0.97,95% CI 0.96-0.99) Female sex (OR 2.06, 95% CI 1.06-4.01)	<ol style="list-style-type: none"> 1. Strength: modified screening instrument provided sooner results 2. Limitations: prior depression and antidepressant use of pt. not assessed prior to study. 3. Risk of harm: none 4. Feasibility: very feasible

feasible in hospitalized stroke patients			ICH n= 63, pt. co-morbidities , stroke characteristics. No attrition rate			logistic regression , linear regression , STATA version 12	When depression score treated as a continuous variable female sex only factor associated with higher score (p = 0.017) Screening positive was not associated w/ poor discharge/day 7 outcome (mRS > 3; OR 1.45, 95% CI 0.74-2.83)	5. Level of evidence for PICOT question type: IV 6. Quality of evidence: moderate USPSTF: B Level of Certainty: moderate
Article #2 Vermeer et al. (2018). Depressive symptoms in individuals after stroke in home-based rehabilitation setting.	None	Retrospective review using correlational regression Quantitative	Participants : n= 3,227 Total after application of inclusion criteria: n =889 gender, marital status, referral source, stroke type	IV= participation in home-based rehabilitation program DV= identify variables that correlate with depressive symptoms	FIM, RNLI, PHQ-9,	Logistic regression analysis	Regression demonstrates (OR= 1.89, p = 0.04), low RNLI scores (OR = 0.92; p = 0.001), and younger age (OR = 0.96; p < 0.001) predicted patients having moderate to severe depressive symptoms.	1. Strength: study demonstrates the need for continuous screening of pt for depressive symptoms 2. Limitations: the study used retrospective data from a large administrative database. Tool does not formally dx pt with depression 3. Risk of harm: none 4. Feasibility: good feasibility 5. Level of evidence for PICOT question type: IV 6. Quality of evidence: moderate 7. USPSTF: C Level of Certainty: moderate
Article #3 McIntosh, C. (2017). A depression screening tool protocol for patients with acute stroke: A quality improvement project	none	A quality Improvement project/Quasi experimental	79 hospitals 56% men, 65% white, 77% admitted w/ ischemic stroke, 48% identified depressed. Age range 26-97. Gender, ethnicity. Past	IV= patients with acute stroke DV= depression screening	PHQ-9,	Descriptive statistics Pearson correlation test, chi-square, SD	Of 79 patients screened 48% (n=39) found to be depressed. History of depression (x ² = 17.09, p=.002) more likely to have higher levels of depression.	8. Strength: identifies the need for implementation specific to the deficit. 2. Limitation: retrospective chart review design and short implementation phase 3. Risk of harm: none 4. Feasibility: good feasibility 5. Level of evidence for PICOT question type: Level V 6. Quality of evidence: moderate 7. USPSTF: C Level of Certainty: moderate

			medical history.					
Article #4 Kapoor et al. (2019). Screening for post-stroke depression and cognitive impairment at baseline predicts long-term patient-centered outcomes after stroke.		Prospective longitudinal cohort study	Participants : n=1504 Age range 17-100 Total after inclusion n= 124; study cohort, eligible patients, enrolled. Attrition 65(24.1%)	IV =post-stroke depression DV = cognitive impairment	FAI, RNLI, PHQ, BDI, MoCA	Univariate and multivariate linear, logistic regression analyses	Older age ($\beta = -1.25, p = .046$), greater stroke severity ($\beta = 1.84, p = .015$), more depressive ($\beta = -2.41, p = .023$), cognitive ($\beta = -2.15, p = .046$) measure of executive function were strongest correlates to poor activity	9. Strength: results highlight the the importance post-stroke depression 2. Limitation: attrition and survivor bias 3. Risk of harm: none 4. Feasibility: fair feasibility 5. Level of evidence for PICOT question type: Level IV 6. Quality of evidence: moderate 7. USPSTF: B Level of Certainty: moderate
Article #5 Babkair, L. A. (2017). Risk factors for poststroke depression: An integrative review.	None noted	Integrative review	PubMed, Cumulative Index to Nursing & allied health literature, & PsycInfo Initial # found: 406 18 met inclusion criteria 3 cross-sectional 14 prospective cohort 1 case control	IV= poststroke depression DV= risk factors	HADS, DSM-IV	Univariate & multivariate linear regression , t Test, Mann-Whitney, thematic analysis	Significant markers for PSD at 3 and 12 months (OR, 2.66;95% CI, 1.35-5.27; $p = .005$). Patient non acceptance of disability at 1 month predicted depression at 9 months (OR, 1.19;95% CI, 1.05-1.35)	10. Strength: the use if multivariate statistical analysis 2. Limitation: western studies and lack of cultural variation, race, & ethnicity as risk factors. 3. Risk of harm: none 4. Feasibility: good feasibility 5. Level of evidence for PICOT question type: Level V 6. Quality of evidence: moderate 7. USPSTF: C Level of Certainty: moderate

			<i>M</i> age of sample 56.3 -80					
Article #6 Zhao, F. -Y et al. (2018). Clinical practice guidelines for post-stroke depression in China	None stated	Systematic review	Meta-analysis of 8 week trials of antidepressant.	IV= post stroke depression DV= clinical practice guidelines	BDI, PHQ-9, HADS	Percentages	No specific characteristics were found	11. Strength: identified the use of Comprehensive assessment help Recognize high risk patients 2. Limitation: small sample size and non-RCT design 3. Risk of harm: none 4. Feasibility: good feasibility 5. Level of evidence for PICOT question type: VII 6. Quality of evidence: low 7. USPSTF: C Level of Certainty: low
Article #7 Ezema et al. (2018). Influence of post-stroke depression on functional independence in Activities of daily living.	None	Cross sectional study/descriptive	N=66 42=female 24 males	IV= post-stroke depression DV= functional recovery	HAM-D, BI	Cronbach's alpha Pearson's <i>r</i> Chi-squared, unpaired <i>t</i> -test Descriptive statistics, mean, standard deviation	Post-stroke depression was associated with poor level functional independence (P=0.000)	1. Strength: none specified 2. Limitation: no standardized stroke duration. Inability to conduct retrospective assessment. 3. Risk of harm: no 4. Feasibility: good feasibility 5. Level of evidence for PICOT question type: VI 6. Quality of evidence: low 7. USPSTF: C Level of Certainty: low
Article #8 Amaricai, E. & Poenaru, D. V. (2016). The post-stroke depression and its	None named	Cross sectional descriptive	N=89 54=men 18= women 72 met inclusion criteria. Age range 29-59	IV= impact on functioning of young and adult stroke patients DV= frequency, degree of PSD	BDI, Hamilton scale, SIS	Mean, standard deviation, pearson's correlation Appendix 24nt, unpaired <i>t</i> -test	Using BDI 5 patients (7%) had normal ups & downs 19 patients (26.3%) had mild mood disturbances Remaining 48 patients (66.6%) with borderline clinical depression.	1. Strength: none noted 2. Limitation: Small sample size, limited to single rehabilitation unit. 3. Risk of harm: no 4. Feasibility: good feasibility 5. Level of evidence for PICOT question type: VI 6. Quality of evidence: moderate 7. USPSTF: B Level of Certainty: moderate

<p>impact on functioning in young and adult stroke patients of a rehabilitation unit.</p>						<p>GraphPad prism</p>		
<p>Article #9 Torrise et al. (2018) Self-Efficacy, poststroke depression, and</p>	<p>None</p>	<p>Descriptive study</p>	<p>N=38 21= female 17= men</p>	<p>IV= self-efficacy DV= post-stroke depression</p>	<p>MADRS, FIM, GSE</p>	<p>Multivariate regression, <i>t</i>-test, Std Err, β, regression coefficient</p>	<p>FIM ($t=6.87$; $P < .0001$) MADRS ($t= 4.27$; $P < .001$) SE ($t= 5.01$; $P < .001$) No significant difference was found between men and</p>	<ol style="list-style-type: none"> 1. Strength: none documented 2. Limitation: small sample size, no evaluation of the correlation of depressive mood with the brain lesion side & size 3. Risk of harm: no 4. Feasibility: feasibility 5. Level of evidence for PICOT question

rehabilitation outcomes: Is there a correlation?							women for FIM & MADRS	type: VI 6. Quality of evidence: low 7. USPSTF: C Level of Certainty: low
Article #10 Harris et al. (2017). Depression and functional status among African American stroke survivors in inpatient rehabilitation.	None named	Cohort Study	n= 458 age sample range 18-98 > than half were males	IV= African American DV= functional status	FIM total FIM motor FIM cognitive	Chi-square, t-tests, Fisher's Exact test, multiple regression models	African Americans with PSD were more functionally impaired at discharge from rehabilitation than those without depression.	1. Strength: none documented 2. Limitation: under-reported depression 3. Risk of harm: none 4. Feasibility: good feasibility 5. Level of evidence for PICOT question type: IV 6. Quality of evidence: low 7. USPSTF: C Level of Certainty: low
Article #11 Ezekiel et al. (2018). Factors associated with participation in life situations for adults with stroke: A systemic review	none	RS & meta-analysis	n= 33 18-99 years old Medline, CINAHL, AMED, Psych INFO, Web of Science	IV = Adults of stroke DV= participation in life situations	CI, ICF	binomial test, univariate, regression analysis, correlation	Older people with more severe stroke and stroke related impairments are most at risk for poor participation	1. Strength: the broad scope of the review 2. Limitation: limitation in ADLs was strongly associated with poor participation with studies reporting medium to large size effect 3. Risk of harm: none 4. Feasibility: excellent feasibility 5. Level of evidence for PICOT question type: I 6. Quality of evidence: moderate 7. USPSTF: B Level of Certainty: moderate
Article #12 Sharma et al. (2021). Post-stroke depression and its effects on functional	None	Case-control study	n= 30 18 males 12 females	IV= post-stroke DV= functional outcomes	HADS-D, HDRS, BI, SSS, MRS,	Descriptive statistics, chi-square, Wilcoxon rank sum test, Mann	Negative correlation between HADS & HDRS. Functional outcomes in stroke survivors with & without PSD improve with comprehensive inpatient rehab.	1. Strength: non documented 2. Limitation: small sample size, assessment of depression by self-report questionnaires 3. Risk of harm: none 4. Feasibility: good feasibility 5. Level of evidence for PICOT question type: IV

<p>outcomes during inpatient rehabilitation.</p>						<p>Whitney, Spearman test</p>		<p>6. Quality of evidence: moderate 7. USPSTF: C Level of Certainty: moderate</p>
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Legend:

ADL= Activities of Daily Living, B-ADL = Barthel Activity Living Index, BDI= Beck Depression Inventory, DSM-IV= Diagnostic and statistical Manual of Mental Disorders, DV= dependent variable, EQ-5D = EuroQol Five Dimensions Questionnaire, FAI= Frenchay Activities Index, FIM = Functional Independence Measure, FOIS = Functional Oral Intake Scale, GSE= General Self-efficacy scale, HADS-A= hospital and anxiety depression scale-anxiety, HADS-D= hospital and anxiety depression scale-depression, Hamilton depression rating scale (HAM-D), ICF= International classification of functioning, ICH- intracranial hemorrhage, IS= ischemic stroke, IV= Independent variable, LB-IADL = Lawton-Brody Instrumental Activity Daily Living Scale, MC= medical center, MNA = Mini Nutritional Assessment, MoCA= Montreal Cognitive Assessment, MADRS=Montgomery-Asberg Depression Scale, mRS= modified Rankin Scale, NIHSS= National Institutes of Health Stroke Scale, OR = odds ratio, PAC program= post-acute care program, PANAS= positive and negative affective scale, PHQ-9= Patient Health Questionnaire, PosMT= positive mental training tool, PSD= port stroke depression, RNLI = reintegration to normal living index, SD= standard deviation, SIS= Stroke Impact Scale

Appendix B PHQ-9 Screening Tool

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

NAME: _____ DATE: _____

Over the last 2 weeks, how often have you been bothered by any of the following problems?
(use "✓" to indicate your answer)

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself	0	1	2	3

add columns + +

(Healthcare professional: For interpretation of TOTAL, TOTAL:
please refer to accompanying scoring card).

10. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all	_____
	Somewhat difficult	_____
	Very difficult	_____
	Extremely difficult	_____

PHQ-9 Patient Depression Questionnaire

For initial diagnosis:

1. Patient completes PHQ-9 Quick Depression Assessment.
2. If there are at least 4 ✓s in the shaded section (including Questions #1 and #2), consider a depressive disorder. Add score to determine severity.

Consider Major Depressive Disorder

- if there are at least 5 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

Consider Other Depressive Disorder

- if there are 2-4 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

Note: Since the questionnaire relies on patient self-report, all responses should be verified by the clinician, and a definitive diagnosis is made on clinical grounds taking into account how well the patient understood the questionnaire, as well as other relevant information from the patient.

Diagnoses of Major Depressive Disorder or Other Depressive Disorder also require impairment of social, occupational, or other important areas of functioning (Question #10) and ruling out normal bereavement, a history of a Manic Episode (Bipolar Disorder), and a physical disorder, medication, or other drug as the biological cause of the depressive symptoms.

To monitor severity over time for newly diagnosed patients or patients in current treatment for depression:

1. Patients may complete questionnaires at baseline and at regular intervals (eg, every 2 weeks) at home and bring them in at their next appointment for scoring or they may complete the questionnaire during each scheduled appointment.
2. Add up ✓s by column. For every ✓: Several days = 1 More than half the days = 2 Nearly every day = 3
3. Add together column scores to get a TOTAL score.
4. Refer to the accompanying **PHQ-9 Scoring Box** to interpret the TOTAL score.
5. Results may be included in patient files to assist you in setting up a treatment goal, determining degree of response, as well as guiding treatment intervention.

Scoring: add up all checked boxes on PHQ-9

For every ✓ Not at all = 0; Several days = 1;
More than half the days = 2; Nearly every day = 3

Interpretation of Total Score

	Depression Severity
1-4	Minimal depression
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20-27	Severe depression

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Appendix C

Flowchart



Appendix D

Evaluation of Depression screening tool Survey Pre & Post evaluation for Stroke Unit

Depression screening tool Project

Pre-evaluation

Shift

1. Are you familiar with the stroke depression screening tool?	AM PM	YES	NO
2. Do you know how to perform the depression screening tool?	AM PM	YES	NO
3. Do you understand the purpose of the depression screening tool?	AM PM	YES	NO
4. Is it useful to your practice?	AM PM	YES	NO
5. Do you use the screening tool for each newly admitted patient?	AM PM	YES	NO

Evaluation of Depression screening tool Survey Pre & Post evaluation for Stroke Unit

Depression screening tool Project

Post-evaluation

Shift

1. Are you familiar with the stroke depression screening tool?	AM PM	YES	NO
2. Do you know how to perform the depression screening tool?	AM PM	YES	NO
3. Do you understand the purpose of the depression screening tool?	AM PM	YES	NO
4. Is it useful to your practice?	AM PM	YES	NO
5. Do you use the screening tool for each newly admitted patient?	AM PM	YES	NO

What way can the depression screening protocol be improved? _____
