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Anxiety in neurological conditions

Date requested: 9/3/2020
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Summary and synthesis

The key piece of research in this area is the Cochrane systematic review by Knapp (26). However, they concluded that the evidence was insufficient to guide the treatment of anxiety after stroke. Further well-conducted randomised controlled trials (using placebo or attention controls) are required to assess pharmacological agents and psychological therapies. This was followed up in 2019 with a commentary of the systematic review (4), which came to similar conclusions.

Treatment options for anxiety in stroke and Parkinson’s vary, from cognitive behavioural therapy (38, 51, 52), music therapy (6, 58), relaxation (36, 46) and more recently virtual reality/technological techniques (1, 5, 10). Other therapies mentioned include herbal (3), aquatic exercise (11), resistance training (57), acceptances and commitment therapy (21), occupational therapy (39) and multifactorial risk faction intervention (42). Treatments have varying levels of success, but most conclude that further research is required.

The remainder of the articles in the search focus on the diagnosis and management of anxiety in stroke and Parkinson’s, article 17 has a broad overview of the effects of depression and anxiety on quality of life in five common neurological disorders which may be useful for your introduction.
1. **Designing virtual reality assisted psychotherapy for anxiety in older adults living with Parkinson's disease: Integrating literature for scoping**
   Thangavelu Karthick Clinical Gerontologist: The Journal of Aging and Mental Health 2020;:--.

   Objective: This review integrates literature to discuss the potential use of virtual reality (VR) in treatment of anxiety in Parkinson’s disease (PD) and inform next steps. Methods: A systematic search was performed to identify studies of VR use in PD, using four databases. Data were reported in accordance to the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR). Results: Thirty-two studies met the inclusion criteria with four VR studies from the same study group directly assessing the effects of anxiety on motor symptoms in PD. Primary studies implementing a VR protocol in PD identified focus areas of understanding and alleviating freezing of gait (FOG), balance training, and cognitive and motor rehabilitation, and informed design considerations. Conclusion: VR in PD studies suggested established feasibility. With appropriate design considerations, a VR based protocol could improve anxiety outcomes in PD. Clinical implications: VR in PD provides control of a patient’s field of view, which can be exploited to induce specific responses, provide visual feedback, analysis of patient actions, and introduce safe challenges in the context of training. VR assisted Cognitive Behavioral Therapy (CBT) tailored to suit subtypes of anxiety disorders in PD have the potential to improve the efficacy and effectiveness of psychotherapy in PD. (PsycINFO Database Record (c) 2020 APA, all rights reserved) (Source: journal abstract)

2. **Determinants of quality of life in patients with hemorrhagic stroke: A path analysis**
   Zhu Wei Medicine 2019;98:--.

   Identifying the determinants of health-related quality of life (HRQOL) improved assessment and decision-making in clinical practice. A few studies have focused on the determinants of HRQOL and their interrelationships in patients with hemorrhagic stroke. The aim of this study was to identify the factors contributing to HRQOL and exam their interrelationships. A total of 202 patients with hemorrhagic stroke who were discharged from the neurological unit participated in this study. Stroke-specific quality of life was used to assess HRQOL. The Hamilton Rating Scale for Anxiety, the Hamilton Rating Scale for Depression, the Scandinavian Stroke Scale and the Barthel Index were collected as potential predictors as well as social-demographic data. A path analysis was used to explore the potential interrelationships between various factors based on the International Classification of Functioning model. The final model reasonably fitted the data. The activities of daily living, neurological function and anxiety had direct effects on quality of life. Age, comorbidities, hemorrhage type, financial status, anxiety, and neurological function also had indirect influences on quality of life. All these factors explained 82.0% of all variance in quality of life. HRQOL in patients with stroke can be predicted by anxiety, neurological function, activities of daily living and other personal and environmental factors. These identified predictors and their interrelationships may assist clinical professions focusing their assessments and developing strategies for modifiable factors to improve HRQOL.

   [Available online at this link](Open Access)

3. **Herbal medicine for post-stroke anxiety: A systematic review and meta-analysis of randomized controlled trials**
   Kwon Chan-Young Complementary Therapies in Clinical Practice 2019;35:237-252-.
The study was conducted to investigate the efficacy and safety of herbal medicine (HM) for post-stroke anxiety (PSA). Through comprehensive searches, twenty randomized controlled trials were included. Meta-analysis showed that compared to the HM group, the conventional pharmacotherapy group showed significantly lower Hamilton anxiety rating scale (HAMA) score after 1 week of treatment, but not after 2, 4, and 6 weeks of treatment, and higher HAMA score after 8 weeks and 3 months of treatment. Meanwhile, compared to the conventional pharmacotherapy alone group, the HM plus conventional pharmacotherapy group showed significantly better results in HAMA score after 2, 4, 6, and 8 weeks of treatment. HM group was associated with lower incidence of adverse events. Current evidence suggests that HM or HM plus conventional pharmacotherapy may be safe and effective in PSA patients within a certain time period. However, due to limited strength of evidence, definite conclusions are not possible.

Highlights • Twenty randomized controlled trials (RCTs) assessing the efficacy of oral herbal for post-stroke anxiety (PSA) were analyzed. • The methodological quality of included studies was generally low. • Herbal medicine alone or combined with conventional pharmacotherapy significantly reduced anxiety of PSA patients in a certain time-period. • Standardizations of diagnostic criteria and herbal medicine treatment strategies for PSA, and rigorous large-scale RCTs are needed on this topic.

4. How effective are treatments for anxiety after stroke? – A Cochrane Review summary with commentary

The aim of this commentary is to discuss in a rehabilitation perspective the published Cochrane Review "Interventions for treating anxiety after stroke" by Knapp, Campbell Burton, Holmes, Murray, Gillespie, Lightbody, Watkins, Chun, & Lewis1, under the direct supervision of the Cochrane Stroke Group. This Cochrane Corner is produced in agreement with NeuroRehabilitation by Cochrane Rehabilitation.

Available online at this link (Open Access)

5. Improving neuropsychiatric symptoms following stroke using virtual reality: A case report
De Luca Rosaria Medicine 2019;98:--.

Rationale: Post-stroke cognitive impairment occurs frequently in patients with stroke, with a 20% to 80% prevalence. Anxiety is common after stroke, and is associated with a poorer quality of life. The use of standard relaxation techniques in treating anxiety in patients undergoing post-stroke rehabilitation have shown some positive effects, whereas virtual reality seems to have a role in the treatment of anxiety disorders, especially when associated to neurological damage.

Patients Concerns: A 50-year-old woman, smokers, affected by hypertension and right ischemic stroke in the chronic phase (i.e., after 12 months by cerebrovascular event), came to our observation for a severe anxiety state and a mild cognitive deficit, mainly involving attention and visuo-executive processes, besides a mild left hemiparesis. Diagnosis: Anxiety in a patient with ischemic stroke. Interventions: Standard relaxation techniques alone in a common clinical setting or the same psychological approach in an immersive virtual environment (i.e., Computer Assisted Rehabilitation Environment - CAREN). Outcomes: The patient's cognitive and psychological profile, with regard to attention processes, mood, anxiety, and coping strategies, were evaluated before and after the 2 different trainings. A significant improvement in the
functional and behavioral outcomes were observed only at the end of the combined approach. Lessons: The immersive virtual reality environment CAREN might be useful to improve cognitive and psychological status, with regard to anxiety symptoms, in post-stroke individuals.

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6. **Music as a Therapy to Alleviate Anxiety During Inpatient Rehabilitation for Stroke**
Le Danseur Maureen M. S. N. C. N. S. Acns- B. C. Crrn C. C. M. Rehabilitation Nursing 2019;44:29-

Purpose The aim of the study was to determine if listening to music may reduce anxiety experienced by stroke patients during acute rehabilitation. Design A prospective, nonblinded, randomized study in an inpatient rehabilitation setting. Methods Fifty participants were randomized into two groups: (1) 1 hour of music (intervention) or (2) no music (control). All participants completed pretest anxiety and depression screening and 44 completed the posttest anxiety screening. Differences between groups were determined using chi-square and t tests. Findings After listening to music for 1 hour, participants who completed the posttest (n = 44) reported significantly less anxiety (p < .0001) compared to before the intervention. The control group showed no difference in their pre- and posttest anxiety scores (p = .84). No differences were determined among age, gender, or diagnostic groups. Conclusions These findings demonstrate that music intervention may help lessen anxiety in rehabilitation patients poststroke. Clinical Relevance Offering musical intervention to stroke patients in rehabilitation may lessen symptoms of anxiety.

7. **Preliminary Screening Recommendations for Patients at Risk of Depression and/or Anxiety more than 1 year Poststroke**

Goal: Depression and anxiety are important complications of stroke but are underdiagnosed in community settings. The current study identified which patients were at increased risk of developing either disorder more than 1 year poststroke to assist in targeted screening. Methods: Crosssectional survey of 147 adults who had a stroke more than 1 year ago were recruited from stroke advocacy/support groups and an outpatient register. Participants completed the Hospital Anxiety and Depression Scale (HADS) and reported whether they had emotional problems as a stroke inpatient (single item: yes/no). Standardized self-report measures evaluated medical (physical independence, health-related quality of life), cognitive (memory, executive functioning), and psychological (social support) variables. Demographic and stroke-related (stroke type, year) information were also recorded. Findings: Between 53% and 80% of respondents (n = 117) screened positive for depressed mood and/or anxiety (HADS subscale cutoffs: ≥8 or ≥4). Logistic regression analyses indicated that stroke survivors who reported having emotional problems as inpatients (odds ratio [OR]: 0.23), were female (OR: 3.42), and had poor health-related quality of life (OR: 0.45-0.53) and cognitive problems (OR: 0.68-0.74), were more likely to screen positive for either disorder. Models based on these variables predicted screening outcomes with 91% accuracy. Conclusions: Community-based stroke survivors who reported experiencing emotional problems as inpatients, were female, or had poor health-related quality of life (chronic pain, disturbed sleep, communication difficulties) and/or cognitive issues were at greater risk of being depressed/anxious. Targeted screening of these patients may help to
identify those who are most in need of more comprehensive clinical assessments and evidence-based interventions.

8. **Psychological factors and subjective cognitive complaints after stroke: Beyond depression and anxiety**

Subjective Cognitive Complaints (SCC) are common after stroke and adversely affect quality of life. In the present study, we determined the associations of depression, anxiety, perceived stress and fatigue with post-stroke SCC, and whether these associations were independent of objective cognitive functioning, stroke characteristics and individual differences in personality traits and coping styles. Using a cross-sectional design, SCC and psychological measures were obtained in 208 patients (mean 3.3 ± 0.5 months after stroke; 65.9% men; mean age 64.9 ± 12.4 years). SCC were assessed using the Checklist for Cognitive and Emotional consequences following stroke (CLCE) inventory. Validated questionnaires were used to measure depression and anxiety (Hospital Anxiety and Depression Scale), perceived stress (Perceived Stress Scale), fatigue (Fatigue Assessment Scale), personality traits (Eysenck Personality Questionnaire Revised Short Scale) and coping style (Utrecht Coping List). Multivariate hierarchical linear regression analyses were used to adjust for covariates. Depression ($\beta = 0.35$), anxiety ($\beta = 0.38$), perceived stress ($\beta = 0.39$), and fatigue ($\beta = 0.39$) were associated with CLCE scores, independent of demographic, cognitive performance and stroke-related covariates. After including personality traits and coping styles in the model, independent associations with CLCE scores were found for fatigue ($\beta = 0.26$, p = .003) and neuroticism ($\beta = 0.21$, p = .05). Interventions aimed at improving psychological resilience and increasing energy levels might be a worthwhile addition to stroke rehabilitation programmes by reducing SCC and improving quality of life.

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9. **Relationship between pre-stroke physical activity and symptoms of post-stroke anxiety and depression: An observational study**

OBJECTIVES: To explore mechanisms affecting mental health in patients with stroke. The aims were to investigate the association between pre-stroke physical activity and symptoms of anxiety and depression 3 months after stroke, and to investigate how self-reported physical activity changed from before to 3 months after the stroke. DESIGN: Secondary analyses of a prospective observational multicentre study. PATIENTS: Stroke patients from 11 Norwegian stroke units. METHODS: Symptoms of anxiety and depression were measured using the Hospital Anxiety and Depression Scale, and physical activity was assessed by self-report. Negative binomial regression was used to analyse associations. RESULTS: The analysed sample consisted of 205 patients; mean age was 74 years (standard deviation (SD) 11.5); 46% were women. Higher activity levels before stroke were associated with fewer symptoms of depression in multivariable analyses with regression coefficient of 0.84 (95% confidence interval 0.73-0.97), p = 0.015. Eighty-five (41.5%) patients reported similar activity levels before and after stroke. CONCLUSION: In this group of patients with mild symptoms of emotional distress, it seems that pre-stroke physical activity might be protective against post-stroke depression, but not anxiety.
Many patients with mild-to-moderate stroke report being equally active before and after the stroke.

10. **Technology-based interventions for mental health support after stroke: A systematic review of their acceptability and feasibility**  
Shek Anthony Chun Neuropsychological Rehabilitation 2019;:--.

Mental health disturbances are common after stroke and linked to a slower recovery. Current face-to-face treatment options are costly and often inaccessible. Technology advances have made it possible to overcome some of these barriers to deliver technology-based mental health interventions remotely, but we do not know how acceptable and feasible they are. This systematic review aims to provide an examination of the acceptability and feasibility of technology-based mental health interventions provided to stroke patients and evaluate any barriers to their adoption. A total of 13 studies were included investigating interventions targeting non-specific mental health, depression or anxiety. The delivery technologies were: video conferencing, computer programmes, telephones, DVDs, CDs, robot-assisted devices, and personal digital assistants. Rates of refusal to participate were low (7.9–25%). Where satisfaction was reported, this was generally high. Many studies achieved high levels of adherence (up to 89.6%). This was lower for some technologies (e.g., robotic assistive devices). Where dropout occurred, this was for reasons including a decline in health as well as technical difficulties. Overall, the literature displays early evidence of using technology to deliver mental health interventions to patients with stroke. This review has identified factors that the design of future studies should take into consideration. (PsycINFO Database Record (c) 2019 APA, all rights reserved) (Source: journal abstract)

11. **A randomized trial of the effects of an aquatic exercise program on depression, anxiety levels, and functional capacity of people who suffered an ischemic stroke**  
Aidar Felipe J. Journal of Sports Medicine & Physical Fitness 2018;58:1171-1177-

BACKGROUND: Aquatic exercise programs are used in rehabilitation and might help to reduce disability after stroke. This was a randomized intervention trial to assess the influence of an aquatic exercise program on people suffering from depression and anxiety after ischemic stroke.  
METHODS: Participants were randomized to an experimental group (EG) composed of 19 individuals (51.8±8.5 years; ten males and nine females), and a control group (CG) composed of 17 people (52.7±6.7 years; nine males and eight females). The aquatic exercise program consisted of two sessions per week, each lasting between 45 and 60 minutes and divided into 5 to 10 minutes exercise sections during 12 weeks. The State- Trait Anxiety Inventory was used to determine anxiety levels while the Beck Depression Inventory was used as a self-assessment of depression. RESULTS: EG improved measures of depression, anxiety trait and anxiety state between pre- and post-treatment, with no changes in CG. EG improved in all tests related to functional capacity compared to CG. CONCLUSIONS: The practice of aquatic exercises promotes improvements in the levels of depression and anxiety in people who suffered an ischemic stroke.
12. **A systematic review of anxiety interventions in stroke and acquired brain injury: Efficacy and trial design**  

Objective: There is little randomized controlled trial (RCT) evidence to guide treatment for anxiety after stroke. We systematically reviewed RCTs of anxiety interventions in acquired brain injury (ABI) conditions including stroke and traumatic brain injury (TBI) in order to summarize efficacy and key aspects of trial design to help guide future RCTs. Methods: We searched the Cochrane trial register, Medline, Embase, PsychInfo and CINAHL systematically up to August 2017. Two independent reviewers systematically selected studies and extracted data. We summarized the effect size, key study characteristics and sources of potential bias in trial design. Results: 14 studies (12 stroke; one stroke & TBI; one TBI) with 928 participants were included. Meta-analysis of five psychotherapy comparisons favoured intervention over control (standardized mean difference (SMD): −0.41 [−0.79, −0.03], I² =28%); Overall effect size of pharmacotherapy comparisons favoured intervention over control (SMD: −2.12 [−3.05, −1.18], I² =89%). One comparison of mixed pharmacotherapy and psychotherapy favoured intervention over usual care (SMD: −4.79 [−5.87, −3.71]). One comparison favoured forest therapy versus urban control (SMD: −2.00 [−2.59, −1.41]). All positive studies carried high or unclear risk of bias. Sample sizes were small in all included studies. Conclusions: There is low quality evidence to suggest that psychotherapy and pharmacotherapy may be effective interventions in the treatment of anxiety after stroke based on underpowered studies that carried high risk of bias. Large-scale well-designed definitive trials are needed to establish whether pharmacological or psychotherapy works. Our review highlighted key considerations for investigators wishing to design high quality trials to evaluate treatments for anxiety after stroke. (PsycINFO Database Record (c) 2018 APA, all rights reserved) (Source: journal abstract)

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13. **Anxiety after stroke: A systematic review and meta-analysis**  

OBJECTIVE: To update the evidence surrounding the presence of anxiety after stroke. DATA SOURCES: A search was conducted in EMBASE, MEDLINE, PsycINFO, Cochrane Library, AMED and CINAHL in May 2015 and repeated in April 2017. STUDY SELECTION: Clinical diagnosis of stroke and assessed for anxiety symptoms on a rating scale in the first year after stroke. DATA EXTRACTION: One reviewer screened and identified studies against the inclusion criteria. A second reviewer conducted a random check of approximately 10% of titles and abstracts. Two authors independently performed the final full-text review. DATA SYNTHESIS: Overall pooled prevalence of anxiety disorders was 29.3% ([95% confidence interval 24.8-33.8%], I(2) = 97%, p < 0.00001) during the first year. Frequency 0-2 weeks post-stroke was 36.7%, 2 weeks to 3 months 24.1%, and 3-12 months 23.8%. There was a statistically high heterogeneity in this estimate (I(2) = 97%, p < 0.00001). CONCLUSION: Anxiety is common during the first year post-stroke. Since anxiety significantly influences quality of life and is a predictor for depression, it may be worth considering further routine screening post-stroke.
14. Anxiety After Stroke: The Importance of Subtyping

Background and Purpose: Anxiety after stroke is common and disabling. Stroke trialists have treated anxiety as a homogenous condition, and intervention studies have followed suit, neglecting the different treatment approaches for phobic and generalized anxiety. Using diagnostic psychiatric interviews, we aimed to report the frequency of phobic and generalized anxiety, phobic avoidance, predictors of anxiety, and patient outcomes at 3 months poststroke/transient ischemic attack.

Methods: We followed prospectively a cohort of new diagnosis of stroke/transient ischemic attack at 3 months with a telephone semistructured psychiatric interview, Fear Questionnaire, modified Rankin Scale, EuroQol-5D5L, and Work and Social Adjustment Scale.

Results: Anxiety disorder was common (any anxiety disorder, 38 of 175 [22%]). Phobic disorder was the predominant anxiety subtype: phobic disorder only, 18 of 175 (10%); phobic and generalized anxiety disorder, 13 of 175 (7%); and generalized anxiety disorder only, 7 of 175 (4%). Participants with anxiety disorder reported higher level of phobic avoidance across all situations on the Fear Questionnaire. Younger age (per decade increase in odds ratio, 0.64; 95% confidence interval, 0.45-0.91) and having previous anxiety/depression (odds ratio, 4.38; 95% confidence interval, 1.94-9.89) were predictors for anxiety poststroke/transient ischemic attack. Participants with anxiety disorder were more dependent (modified Rankin Scale score 3-5, [anxiety] 55% versus [no anxiety] 29%; P<0.0005), had poorer quality of life on EQ-5D5L, and restricted participation (Work and Social Adjustment Scale: median, interquartile range, [anxiety] 19.5, 10-27 versus [no anxiety] 0, 0-5; P<0.001).

Conclusions: Anxiety after stroke/transient ischemic attack is predominantly phobic and is associated with poorer patient outcomes. Trials of anxiety intervention in stroke should consider the different treatment approaches needed for phobic and generalized anxiety.

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15. Detecting anxiety in individuals with parkinson disease: A systematic review
Mele Bria Neurology 2018;90:e39-.

Objective: To examine diagnostic accuracy of anxiety detection tools compared with a gold standard in outpatient settings among adults with Parkinson disease (PD). Methods: A systematic review was conducted. MEDLINE, EMABASE, PsycINFO, and Cochrane Database of Systematic Reviews were searched to April 7, 2017. Prevalence of anxiety and diagnostic accuracy measures including sensitivity, specificity, and likelihood ratios were gathered. Pooled prevalence of anxiety was calculated using Mantel-Haenszel-weighted Der-Simonian and Laird models. Results: A total of 6,300 citations were reviewed with 6 full-text articles included for synthesis. Tools included within this study were the Beck Anxiety Inventory, Geriatric Anxiety Inventory (GAI), Hamilton Anxiety Rating Scale, Hospital Anxiety and Depression Scale–Anxiety, Parkinson’s Anxiety Scale (PAS), and Mini–Social Phobia Inventory. Anxiety diagnoses made included generalized anxiety disorder, social phobia, and any anxiety type. Pooled prevalence of anxiety was 30.1% (95% confidence interval 26.1%–34.0%). The GAI had the best-reported sensitivity of 0.86 and specificity of 0.88. The observer-rated PAS had a sensitivity of 0.71 and the highest specificity of 0.91. Conclusions: While there are 6 tools validated for anxiety screening in PD populations, most tools are only validated in single studies. The GAI is brief and easy to use, with a good balance of sensitivity and specificity. The PAS was specifically developed for PD, is brief, and has self-/observer-rated scales, but with lower sensitivity. Health care practitioners involved in PD care need to be aware of available validated tools and choose one
that fits their practice. (PsycINFO Database Record (c) 2018 APA, all rights reserved) (Source: journal abstract)

16. Diagnostic overshadowing of anxiety in Parkinson disease: Psychosocial factors and a cognitive-behavioral model

Anxiety in Parkinson disease (PD) is highly prevalent yet frequently underdiagnosed and undertreated, and historically overshadowed in research by a focus on depression. Recently, interest in anxiety has been building with the recognition of its significant impact on quality of life in PD. Anxiety is typically conceptualized as one of many "nonmotor" manifestations of neurologic change, with minimal consideration of potentially important psychosocial factors. This narrative review used a systematic search strategy to identify and synthesize the available evidence for psychosocial risk factors for anxiety. Thirty relevant articles were located and reviewed, and demographic, disease/pharmacologic, and psychosocial risk factors for anxiety in PD were identified. A prominent finding was that individuals with motor fluctuation appeared to be more vulnerable to anxiety. A cognitive-behavioral model of anxiety in PD is proposed and illustrated with a clinical example. (PsycINFO Database Record (c) 2018 APA, all rights reserved)

17. Effects of depression and anxiety on quality of life in five common neurological disorders

BACKGROUND: It is unclear whether anxiety and depression impact health-related quality of life (HRQoL) equally across neurological diseases. This study examines the association between anxiety or depression and HRQoL in select neurological disorders. METHODS: HRQoL was measured using the Short Form Health Survey (SF-12) in neurological patients: epilepsy (n=279), migraine (n=268), multiple sclerosis (MS) (n=222), stroke (n=204), and Parkinson's disease (PD) (n=224). Depression and anxiety symptoms were assessed using the Patient Health Questionnaire (PHQ-9) and Hospital Anxiety and Depression Scale (HADS-A), respectively. Multiple linear regression was used to evaluate variables associated with the SF-12 mental health component (MCS) and physical health component scores (PCS). Pratt index was used to estimate the relative importance of anxiety and depression on HRQoL. RESULTS: Anxiety and depression had the largest contribution to PCS in stroke and to MCS in epilepsy. Overall, anxiety and depression had a larger contribution to MCS as compared to PCS, except in stroke patients. Different patterns were seen across neurological diseases, with mental health variables strongly affecting MCS in all conditions, with also a sizable contribution to PCS in migraine, MS, and stroke. CONCLUSIONS: Anxiety and depression have varying impacts on HRQoL across neurological diseases. It is important for clinicians to be aware of how these patterns differ in each condition.

18. Factors influencing self-reported anxiety or depression following stroke or TIA using linked registry and hospital data
PURPOSE: Approximately 30-50% of survivors experience problems with anxiety or depression post-stroke. It is important to understand the factors associated with post-stroke anxiety or depression to identify effective interventions. METHODS: Patient-level data from the Australian Stroke Clinical Registry (years 2009-2013), from participating hospitals in Queensland (n = 23), were linked with Queensland Hospital Emergency and Admission datasets. Self-reported anxiety or depression was assessed using the EQ-5D-3L, obtained at 90-180 days post-stroke. Multivariable multilevel logistic regression, with manual stepwise elimination of variables, was used to investigate the association between self-reported anxiety or depression, patient factors and acute stroke processes of care. Comorbidities, including prior mental health problems (e.g. anxiety, depression and dementia) coded in previous hospital admissions or emergency presentations using ICD-10 diagnosis codes, were identified from 5 years prior to stroke event.

RESULTS: 2853 patients were included (median age 74; 45% female; 72% stroke; 24% transient ischaemic attack). Nearly half (47%) reported some level of anxiety or depression post-stroke. The factors most strongly associated with anxiety or depression were a prior diagnosis of anxiety or depression [Adjusted Odds Ratio (aOR) 2.37, 95% confidence interval (95% CI) 1.66-3.39; p < 0.001], dementia (aOR 1.91, 95% CI 1.24-2.93; p = 0.003), being at home with support (aOR 1.41, 95% CI 1.12-1.69; p = < 0.001), and low socioeconomic advantage compared to high (aOR 1.59, 95% CI 1.21-2.10; p = 0.001). Acute stroke processes of care were not independently associated with anxiety or depression. CONCLUSIONS: Identification of those with prior mental health problems for early intervention and support may help reduce the prevalence of post-stroke anxiety or depression.

Available online at this link (NHS OpenAthens login required)

19. High serum levels of malondialdehyde and antioxidant enzymes are associated with post-stroke anxiety
Liu Zhihua Neurological Sciences 2018;39:999-1007-.

Post-stroke anxiety (PSA) is a common neuropsychiatric affective disorder occurring after stroke. The purpose of this study was to investigate the association between anxiety and the serum levels of oxidative stress markers at admission. First-ever or recurrent ischemic stroke patients were consecutively recruited into the study and followed up 1 month. Patients were divided into PSA and non-PSA group according DSM-IV criteria for anxiety due to stroke. Overall, 49 patients (24.1%) were diagnosed anxiety. Serum GPX (glutathione peroxidase), CAT (catalase), SOD (superoxide dismutase), and MDA (malondialdehyde) were significantly higher in patients with anxiety than patients without anxiety. The HAM-A scores had a significant positive association with MDA levels. In multivariate logistic regression analysis, serum antioxidant enzymes and MDA were independent predictors of PSA. An increased risk of PSA was associated with serum MDA levels ≥ 3.0 nmol/ml (adjusted OR 8.68, 95% CI 3.02-24.95; P < 0.001) after adjusting for relevant confounders such as social support and treatments at admission. Elevated serum levels of lipid oxidation products and antioxidant enzymes at admission were associated with anxiety 1 month after stroke, suggesting that these alterations might participate in the pathophysiology of anxiety symptoms in stroke patients.

Available online at this link (NHS OpenAthens login required)

20. Parkinson’s: mental health matters too
Carney Sam British Journal of Neuroscience Nursing 2018;14:272-.
In May 2018, following a year long inquiry, the All-Party Parliamentary Group (APPG) on Parkinson’s (Parkinson’s UK, 2018), a cross-party group of MPs and peers interested in Parkinson’s, released their report Mental health matters too: improving mental health services for people with Parkinson’s experiencing anxiety and depression (APPG on Parkinson’s, 2018). They took evidence from people with Parkinson’s, health professionals and academics. The inquiry looked at access to and quality of mental health services, as well as evidence of what works, and data on the use of existing services by people with Parkinson’s.

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21. The effectiveness of acceptance and commitment therapy on anxiety in clients with stroke

OBJECTIVE: The purpose of this study was to determine the effects of acceptance and commitment therapy on anxiety in patients with stroke, especially during the first stage of recovery. METHOD: This quantitative study featured a quasi-experimental design without a control group and was conducted in the stroke ward of a public hospital. The 33 respondents were selected via consecutive sampling. The data analysis was completed using the paired t-test. RESULTS: The use of acceptance and commitment therapy significantly the signs and symptoms of anxiety in patients with stroke (p-value = < 0.005). Specifically, acceptance and commitment therapy effectively decreases anxiety levels from a moderate level to a mild level in clients who are recovering from stroke. CONCLUSIONS: Acceptance and commitment therapy is a recommended treatment for reducing anxiety in stroke patients. The design of this study can be further developed to include a control group.

22. The longitudinal relationship between acceptance and anxiety and depression in people who have had a stroke
Crowley Dominic Aging & Mental Health 2018;22:1321-1328.

Objectives: The role that acceptance may play in anxiety and depression has received little attention in stroke, unlike other chronic conditions. This study aimed to clarify whether acceptance of a stroke is related to anxiety and depression post-stroke when controlling for social support. Design: A longitudinal design was employed with 35 participants completing measures at two time points: three-month and nine-month post-stroke. Methods: Forty-one stroke patients, who were three-month post-stroke, were recruited from a stroke service register. Participants completed measures of anxiety, depression, social support and acceptance at two time points, six months apart. Results: Acceptance was moderately and negatively correlated with anxiety and depression at three- and nine-month post-stroke. Acceptance showed a moderate and positive correlation with emotional and practical social support at Time 1 but not at Time 2. Acceptance at Time 1 was a stronger predictor of both anxiety and depression at Time 2 than emotional or practical social support. Conclusions: Acceptance is an important area to consider in relation to rehabilitation and adjustment following a stroke.

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23. Anxiety disorders and risk of stroke: A systematic review and meta-analysis
BACKGROUND: Anxiety disorders are the most common mental health problem worldwide. However, the evidence on the association between anxiety disorders and risk of stroke is limited. This systematic review and meta-analysis presents a critical appraisal and summary of the available evidence on the association between anxiety disorders and risk of stroke.

METHODS: Cohort studies reporting risk of stroke among patients with anxiety disorders were searched in PubMed, Embase, PsycINFO, Scopus, and the Web of Science, from database inception to June 2016. The quality of the studies was assessed using standard criteria. A meta-analysis was undertaken to obtain pooled estimates of the risk of stroke among patients with anxiety disorders.

RESULTS: Eight studies, including 950,759 patients, from the 11,764 references initially identified, were included in this review. A significantly increased risk of stroke for patients with anxiety disorders was observed, with an overall hazard ratio: 1.24 (1.09-1.41), P=0.001. No significant heterogeneity between studies was detected and the funnel plot suggested that publication bias was unlikely. Limited evidence suggests that the risk of stroke is increased shortly after the diagnosis of anxiety and that risk of stroke may be higher for patients with severe anxiety.

CONCLUSIONS: Anxiety disorders are a very prevalent modifiable condition associated with risk of stroke increased by 24%. This evidence could inform the development of interventions for the management of anxiety and the prevention of stroke. Further studies on the risk of stroke in patients with anxiety, and the explanatory factors for this association, are required.

24. Factors Associated with Poststroke Anxiety: A Systematic Review and Meta-Analysis
Wright Francesca Stroke Research & Treatment 2017;:1-7-.

Background and Purpose. Anxiety affects 25% of stroke survivors. There are no effective treatments. Poststroke depression, prestroke anxiety and depression, locus of control, coping, confidence, fatigue, and sleep are factors that may be associated with poststroke anxiety and can potentially be targeted by therapy. We systematically reviewed the literature and performed a meta-analysis to identify associations with these factors. Methods. We searched electronic databases from January 2014 to July 2015 to complement a literature search performed from inception to May 2014. Study quality was assessed using an internationally endorsed checklist. We used odds ratios (ORs) to estimate the strength of associations and random-effects modelling to calculate summary effect sizes. Results. There were 24 studies recruiting 15448 patients. Quality of reporting was satisfactory. 13 studies with 2408 patients reported associations between poststroke anxiety and poststroke depression (OR=4.66, 95% confidence interval: 2.23, 9.74). One study reported association with prestroke anxiety, three with prestroke depression, one with fatigue, and two with sleep. No studies reported on locus of control, coping, or confidence. Conclusion. Poststroke anxiety was associated with depression but there are limited data on other modifiable associations. Further research is needed to identify potential targets for treatment.

Available online at this link (Open Access)

25. Imaging the Etiology of Apathy, Anxiety, and Depression in Parkinson's Disease: Implication for Treatment
Thobois S. Curr Neurol Neurosci Rep 2017;17:76-.
Apathy, depression, and anxiety are among the most important non-motor signs of Parkinson's disease (PD). This may be encountered at early stages of illness and represent a major source of burden. Understanding their pathophysiology is a major prerequisite for efficient therapeutic strategies. Anatomical and metabolic imaging studies have enabled a breakthrough by demonstrating that widespread abnormalities within the limbic circuits notably the orbitofrontal and anterior cingulate cortices, amygdala, thalamus, and ventral striatum are involved in the pathophysiology of depression, anxiety, and apathy in PD. Functional imaging has further shown that mesolimbic dopaminergic but also serotonergic lesions play a major role in the mechanisms of these three neuropsychiatric manifestations, which has direct therapeutic implications.

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26. Interventions for treating anxiety after stroke
Knapp P. Cochrane Database Syst Rev 2017;5:Cd008860-. 

BACKGROUND: Approximately 20% of stroke patients experience clinically significant levels of anxiety at some point after stroke. Physicians can treat these patients with antidepressants or other anxiety-reducing drugs, or both, or they can provide psychological therapy. This review looks at available evidence for these interventions. This is an update of the review first published in October 2011. OBJECTIVES: The primary objective was to assess the effectiveness of pharmaceutical, psychological, complementary, or alternative therapeutic interventions in treating stroke patients with anxiety disorders or symptoms. The secondary objective was to identify whether any of these interventions for anxiety had an effect on quality of life, disability, depression, social participation, caregiver burden, or risk of death. SEARCH METHODS: We searched the trials register of the Cochrane Stroke Group (January 2017). We also searched the Cochrane Central Register of Controlled Trials (CENTRAL; the Cochrane Library; 2017, Issue 1: searched January 2017); MEDLINE (1966 to January 2017) in Ovid; Embase (1980 to January 2017) in Ovid; the Cumulative Index to Nursing and Allied Health Literature (CINAHL; 1937 to January 2017) in EBSCO; and PsycINFO (1800 to January 2017) in Ovid. We conducted backward citation searches of reviews identified through database searches and forward citation searches of included studies. We contacted researchers known to be involved in related trials, and we searched clinical trials registers for ongoing studies. SELECTION CRITERIA: We included randomised trials including participants with a diagnosis of both stroke and anxiety for which treatment was intended to reduce anxiety. Two review authors independently screened and selected titles and abstracts for inclusion. DATA COLLECTION AND ANALYSIS: Two review authors independently extracted data and assessed risk of bias. We performed a narrative review. We planned to do a meta-analysis but were unable to do so as included studies were not sufficiently comparable. MAIN RESULTS: We included three trials (four interventions) involving 196 participants with stroke and co-morbid anxiety. One trial (described as a 'pilot study') randomised 21 community-dwelling stroke survivors to four-week use of a relaxation CD or to wait list control. This trial assessed anxiety using the Hospital Anxiety and Depression Scale and reported a reduction in anxiety at three months among participants who had used the relaxation CD (mean (standard deviation (SD) 6.9 (+/- 4.9) and 11.0 (+/- 3.9)), Cohen's d = 0.926, P value = 0.001; 19 participants analysed). The second trial randomised 81 participants with co-morbid anxiety and depression to paroxetine, paroxetine plus psychotherapy, or standard care. Mean levels of anxiety severity scores based on the Hamilton Anxiety Scale (HAM-A) at follow-up were 5.4 (SD +/- 1.7), 3.8 (SD +/- 1.8), and 12.8 (SD +/- 1.9), respectively (P value < 0.01). The third trial randomised 94 stroke patients, also with co-morbid anxiety and depression, to receive buspirone hydrochloride or standard care. At follow-up, the mean levels of anxiety based on the HAM-A were 6.5 (SD +/- 3.1) and 12.6 (SD +/- 3.4) in the two groups, respectively, which represents a significant difference (P value < 0.01). Half of the participants receiving paroxetine...
experienced adverse events that included nausea, vomiting, or dizziness; however, only 14% of those receiving buspirone experienced nausea or palpitations. Trial authors provided no information about the duration of symptoms associated with adverse events. The trial of relaxation therapy reported no adverse events. The quality of the evidence was very low. Each study included a small number of participants, particularly the study of relaxation therapy. Studies of pharmacological agents presented details too limited to allow judgement of selection, performance, and detection bias and lack of placebo treatment in control groups. Although the study of relaxation therapy had allocated participants to treatment using an adequate method of randomisation, study recruitment methods might have introduced bias, and drop-outs in the intervention group may have influenced results. AUTHORS' CONCLUSIONS: Evidence is insufficient to guide the treatment of anxiety after stroke. Further well-conducted randomised controlled trials (using placebo or attention controls) are required to assess pharmacological agents and psychological therapies.

Available online at this link (Open Access)

27. Psychological and emotional needs, assessment, and support post-stroke: a multi-perspective qualitative study
Harrison M. Top Stroke Rehabil 2017;24:119-125-

BACKGROUND: International stroke care guidelines recommend the routine assessment and management of psychological and emotional problems post-stroke. Understanding the experiences of those delivering and receiving these services is vital to improving the provision of psychological support post-stroke. OBJECTIVES: To explore patients', carers', and health professionals' experiences of psychological need, assessment, and support post-stroke while in hospital and immediately post-discharge. METHODS: Participants were recruited from seven specialist stroke services in the north of England. Qualitative semi-structured interviews and focus groups were conducted with 31 stroke patients, 28 carers, and 66 health professionals. The interviews were recorded and transcribed verbatim and analyzed using thematic analysis. RESULTS: Two central themes emerged minding the gap: psychological expertise, and protective factors perceived to reduce the need for formal psychological support. The lack of psychological expertise among healthcare professionals working on stroke units was a source of frustration and resulted in other disciplines assuming the role of a psychologist without the required skills and training. Multiple stakeholders discussed the importance of protective factors, including downward social comparison, social support, peer support, communication, and information provision, that were perceived to reduce the need for formal psychological support. DISCUSSION: Stroke patients need better access to psychological support, including information, advice, and peer or social support. More research is required to establish the effectiveness of alternative options to formal psychological support.

28. A study of the validity and the reliability of the Geriatric Anxiety Inventory in screening for anxiety after stroke in older inpatients
Kneebone Ian I. Clinical Rehabilitation 2016;30:1220-1228-

Objectives: To investigate the validity and reliability of the Geriatric Anxiety Inventory in screening for anxiety in older inpatients post-stroke. Design: Longitudinal. Subjects: A total of 81 inpatients with stroke aged 65 years or older were recruited at four centres in England. Main
measures: At phase 1 the Geriatric Anxiety Inventory and the Hospital Anxiety and Depression Scale were administered and then the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders 4th edition (phase 2). The Geriatric Anxiety Inventory was repeated a median of seven days later (phase 3). Results: Internal reliability of the Geriatric Anxiety Inventory was high ($\alpha = 0.95$) and test–retest reliability acceptable ($\tau_B = 0.53$). Construct validity was evident relative to the Hospital Anxiety and Depression Scale – Anxiety subscale ($\tau_B = 0.61$).

At a cut off of 6/7, sensitivity of the Geriatric Anxiety Inventory was 0.88, specificity 0.84, with respect to the Structured Clinical Interview anxiety diagnosis. Hospital Anxiety and Depression Scale – Anxiety subscale sensitivity was 0.88, specificity 0.54 at the optimum cut off of 5/6. A comparison of the areas under the curve of the Receiver Operating Characteristics for the two instruments indicated that the area under the curve of the Geriatric Anxiety Inventory was significantly larger than that of the Hospital Anxiety and Depression Scale – Anxiety subscale, supporting its superiority. Conclusions: The Geriatric Anxiety Inventory is an internally consistent, reliable (stable) and valid instrument with acceptable sensitivity and specificity to screen for anxiety in older inpatients with stroke.

29. Anxiety is associated with freezing of gait and attentional set-shifting in Parkinson’s disease: A new perspective for early intervention

Previous research has shown that anxiety in Parkinson's disease (PD) is associated with freezing of gait (FOG), and may even contribute to the underlying mechanism. However, limited research has investigated whether PD patients with FOG (PD+FOG) have higher anxiety levels when compared directly to non-freezing PD patients (PD-NF) and moreover, how anxiety might contribute to FOG. The current study evaluated whether: (i) PD+FOG have greater anxiety compared to PD-NF, and (ii) anxiety in PD is related to attentional set-shifting, in order to better understand how anxiety might be contributing to FOG. In addition, we explored whether anxiety levels differed between those PD patients with mild FOG (PD+MildFOG) compared to PD-NF. Four hundred and sixty-one patients with PD (231 PD-NF, 180 PD+FOG, 50 PD+MildFOG) were assessed using the Freezing of Gait Questionnaire item 3 (FOG-Q3), Hospital Anxiety and Depression Scale (HADS), Digit Span Test, Logical Memory Retention Test and Trail Making Tests. Compared to PD-NF, PD+FOG had significantly greater anxiety ($p<0.001$). PD+MildFOG, however, demonstrated similar levels of anxiety as the PD+FOG. In all patients, the severity of anxiety symptoms was significantly correlated to their degree of self-reported FOG on FOG-Q3 ($p<0.001$) and TMT B-A ($p=0.039$). Similar results were found for depression. In conclusion, these results confirm the key role played by anxiety in FOG and also suggest that anxiety might be a promising biomarker for FOG. Future research should consider whether treating anxiety with pharmacological and/or cognitive behavioural therapies at early stages of gait impairment in PD may alleviate troublesome FOG.

30. Clarifying the associations between anxiety, depression and fatigue following stroke
Galligan Niall G. Journal of Health Psychology 2016;21:2863-2871–.

Both psychological distress and fatigue are common post stroke. Although there is recognition that the phenomena are related, the nature of the relationship is unclear. Cross-sectional study of 98 independently functioning participants within 2 years of stroke. Significant relationships were observed between fatigue and general anxiety, health-related anxiety and stroke-specific
anxiety (r range from .31 to .37). In the final regression model, depression, pain and stroke-specific anxiety were significant, accounting for 32 per cent of the variance in fatigue scores (p < .001). The findings provide insight into the importance of anxiety-related factors post stroke, their relevance to our understanding of post-stroke fatigue and their implications for post-stroke intervention.

31. Depression, anxiety, and apathy in Parkinson’s disease: Insights from neuroimaging studies

Depression, anxiety and apathy are common mood disturbances in Parkinson's disease (PD) but their pathophysiology is unclear. Advanced neuroimaging has been increasingly used to unravel neural substrates linked to these disturbances. A systematic review is provided of neuroimaging findings in depression, anxiety and apathy in PD. A PubMed, MEDLINE and EMBASE search of peer-reviewed original research articles on these mood disturbances in PD identified 38 studies on depression, eight on anxiety and 14 on apathy in PD. Most of the imaging studies used either position emission tomography or single-photon emission computed tomography techniques. These studies generally suggest increased neural activity in the prefrontal regions and decreased functional connectivity between the prefrontal–limbic networks in depressed patients. Functional imaging studies revealed an inverse correlation between dopaminergic density in the caudate and putamen with the severity of anxiety in PD. There was no consistent correlation between dopaminergic density of thalamus and anxiety. Studies demonstrated both positive and inverse correlations between apathy and metabolism or activity in the striatum, amygdalar, prefrontal, temporal and parietal regions. The clinical variability of study subjects and differences in image pre-processing and analytical strategies may contribute to discrepant findings in these studies. Both nigrostriatal and extra-nigrostriatal pathways (in particular the frontal region and its connecting areas) are affected in mood disorders in PD. Identifying the relative contributions of these neural pathways in PD patients with overlapping motor and mood symptoms could provide new pathophysiological clues for the development of better therapeutic targets for affected patients. (PsycINFO Database Record (c) 2019 APA, all rights reserved) (Source: journal abstract)

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32. Guidelines for dementia or Parkinson's disease with depression or anxiety: a systematic review
Goodarzi Z. BMC Neurol 2016;16:244.

BACKGROUND: Depression and anxiety remain under-diagnosed and under-treated in those with neurologic diseases such as dementia or Parkinson’s Disease (PD). Our objectives were to first, to provide a synthesis of high quality guidelines available for the identification and management of depression or anxiety in those with dementia or PD. Second, to identify areas for improvement for future guidelines. METHODS: We searched MEDLINE, PsycINFO, and EMBASE (2009 to July 24, 2015), grey literature (83 sources; July 24-Sept 6, 2015), and bibliographies of included studies. Included studies were evaluated for quality by four independent reviewers the AGREE II tool. Guideline characteristics, statements and recommendations relevant to depression or anxiety for dementia and PD were then extracted. (PROSPERO CRD: 42016014584) RESULTS: 8121 citations were reviewed with 31 full text articles
included for assessment with the AGREE II tool. 17 were of sufficient quality for inclusion. Mean overall quality scores were between 4.25 to 6.5. Domain scores were lowest in the areas of stakeholder involvement, applicability, and editorial independence. Recommendations for the screening and diagnosis of depression were found for PD and dementia. There was little evidence to guide diagnosis or management of anxiety. Non-pharmacologic therapies were recommended for dementia patients. Most advocated pharmacologic treatment for depression, for both PD and dementia, but did not specify an agent due to lack of evidence. CONCLUSIONS: The available recent high quality guidelines outline several recommendations for the management of comorbid depression or anxiety in PD or dementia. However there remain significant gaps in the evidence.

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33. Long-term depressive symptoms and anxiety after transient ischaemic attack or ischaemic stroke in young adults

BACKGROUND AND PURPOSE: Few studies exist on long-term post-stroke depressive symptoms and anxiety in young adults, although these young patients have a particular interest in their long-term prognosis, given their usually long life expectancy and being in the midst of an active social, working and family life. The aims of this study were to investigate the prevalence of depressive symptoms and anxiety and their association with clinical and demographic variables and with functional outcome after stroke in young adults. METHODS AND RESULTS: Long-term prevalence of depressive symptoms and anxiety was calculated in 511 patients with a transient ischaemic attack or ischaemic stroke, aged 18-50 years, using the Hospital Anxiety and Depression scale, compared with 147 controls. Functional outcome was assessed with the modified Rankin Score (mRS) and the Instrumental Activities of Daily Living scale (IADL). 16.8% of patients had depressive symptoms and 23.0% had anxiety, versus 6.1% (P = 0.001) and 12.2% (P < 0.001) in controls. In ischaemic stroke patients, depressive symptoms and anxiety were associated with poor functional outcome (mRS > 2 or IADL < 8). CONCLUSION: Even a decade after stroke at young age, depressive symptoms and anxiety were prevalent and associated with poor functional outcome. Therefore, even in the long term, treating physicians should be aware of the long-term presence of these symptoms as their recognition may be the first step in improving long-term functional independence.

34. Psychological predictors of anxiety and depression in Parkinson's disease: A systematic review

Objectives: Parkinson’s disease (PD) is a neurodegenerative disorder, affecting the motor system with psychological difficulties also frequently reported. While explanations for psychological difficulties are historically situated within a biomedical framework, more recently the relevance of psychological determinants has become a research focus. This review therefore examines this relationship with the two most commonly reported psychological difficulties (anxiety and depression) in people with PD. Method: Databases were systematically searched up to December 17, 2013, identifying 24 studies meeting inclusion criteria. Results: Significant predictors of heightened anxiety and depression included increased emotion-focused coping; less problem-focused coping; lower perceived control; more dominant beliefs about PD as part of a person’s identity and influence on life; less social support and more avoidant personality types. Conclusions: Relationships between some specific psychological predictors and
depression and anxiety seem well supported. The complexity of relationships between these psychological determinants should be taken into consideration when delivering psychological interventions. (PsycINFO Database Record (c) 2016 APA, all rights reserved) (Source: journal abstract)

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35. Risk Factors for Symptoms of Depression and Anxiety One Year Poststroke: A Longitudinal Study
Kootker Joyce A. Archives of Physical Medicine & Rehabilitation 2016;97:919-928.

Objective To estimate the relative contribution of psychological factors next to sociodemographic and premorbid/stroke-related factors to the risk of developing symptoms of depression and anxiety after stroke. Design Multicenter, longitudinal cohort study. Setting Patients after stroke from 6 general hospitals. Patients Patients (N=331) were included at stroke onset and followed up 2 and 12 months after stroke. Interventions Not applicable. Main Outcome Measures Sociodemographic and premorbid/stroke-related information was recorded during hospital admission, whereas psychological characteristics were determined with postal questionnaires 2 months poststroke. Symptoms of depression and anxiety were assessed with the Hospital Anxiety and Depression Scale (HADS) 2 and 12 months poststroke. Multivariable logistic analysis was performed to analyze the influence of sociodemographic, premorbid/stroke-related, and psychological characteristics on depressive symptoms (depression subscale of HADS >7) and symptoms of anxiety (anxiety subscale of HADS >7) 1 year after stroke. Results Early depression, stroke severity, posterior cerebral artery stroke, and neuroticism independently explained the variance of depressive symptoms 1 year poststroke (discriminative power, 83%; adjusted R 2 value, 36%). Neuroticism and early anxiety independently explained the variance of symptoms of anxiety 1 year poststroke (discriminative power, 88%; adjusted R 2 value, 44%). Based on these predictive models, nomograms were constructed to visually reflect the individual contribution of each risk factor to the development of long-term mood disorders after stroke. Conclusions Psychological characteristics are important risk factors for poststroke symptoms of depression and anxiety.

36. Self-help relaxation for post-stroke anxiety: a randomised, controlled pilot study

Objective: To consider relaxation as a potential treatment for anxiety in stroke survivors living in the community, including feasibility and acceptability. Design: Randomised two group design (intervention and control). Participants: All participants (n = 21) were stroke survivors living in the community who reported experiencing anxiety (Hospital Anxiety and Depression Scale - Anxiety Subscale ≥ 6). Interventions: The intervention group were asked to listen to a self-help autogenic relaxation CD, five times a week, for at least one month. Participants completed the Hospital Anxiety and Depression Scale at screening and then monthly for three months. Results: At each assessment following screening, participants who received the relaxation training were significantly more likely to report reduced anxiety compared to those who had not received the training (Month 1 P = 0.002; Month 2 P < 0.001; Month 3 P = 0.001). After one month, seven of the intervention group (n = 10) had completed the relaxation training as directed and planned to continue using it. The intervention appeared practical to deliver and relatively inexpensive, with
minimal adverse effects. Conclusions: Preliminary evidence suggests that autogenic relaxation training delivered in a self-help CD format is a feasible and acceptable intervention, and that anxiety is reduced in stroke survivors who received the intervention. Future studies should seek to recruit a larger and more heterogeneous sample of 70 participants.

37. The High Prevalence of Anxiety Disorders After Stroke

Objectives: Previous studies indicate that post-stroke anxiety is common and persistent. We aimed to determine whether point prevalence of anxiety after stroke is higher than in the population at large, and whether the profile of anxiety symptoms is different. Methods: This case-control study was conducted in Göteborg, Sweden, with stroke patients recruited from the Sahlgrenska University Hospital and a comparison group selected from local population health studies. We included 149 stroke survivors (assessed at 20 months post-stroke) and 745 participants from the general population matched for age and sex. A comprehensive psychiatric interview was conducted, with anxiety and depressive disorders diagnosed according to DSM-III-R criteria. Results: Those in the stroke group were significantly more likely than those in the comparison group to have generalized anxiety disorder (GAD) (27% versus 8%), phobic disorder (24% versus 8%) and obsessive-compulsive disorder (9% versus 2%). Multivariate regression indicated that being in the stroke group, female sex, and having depression were all significant independent associates of having an anxiety disorder. In terms of symptom profile, stroke survivors with GAD were significantly more likely to report vegetative disturbance than those in the comparison group with GAD but less likely to have observable muscle tension or reduced sleep. Conclusions: Point prevalence of anxiety disorders is markedly higher after stroke than in the general population, and this cannot be attributed to higher rates of comorbid depression.

38. Cognitive Behaviour Therapy for Depression and Anxiety in Parkinson's Disease

Evidence is reviewed demonstrating that cognitive behavior therapy (CBT) is effective in the treatment of depression and anxiety in Parkinson’s disease. The aims were to review the extant literature, specify a model of cognitive and behavioral maintenance factors in depression and anxiety in Parkinson’s disease and provide a guide to treatment. It is argued that treatment should take into account specific cognitive and behavioral maintaining factors. Symptoms of depression and anxiety are highly prevalent in Parkinson’s disease and therapists should consider how to augment the efficacy of CBT for patients with Parkinson’s disease. Cognitive and behavioral interventions can help people overcome some of the challenges in living with PD by maximizing wellbeing and overall quality of life.

39. Effectiveness of Interventions for Adults With Psychological or Emotional Impairment After Stroke: An Evidence-Based Review

This evidence-based review was conducted to evaluate the effectiveness of occupational therapy interventions to prevent or mitigate the effects of psychological or emotional
impairments after stroke. Thirty-nine journal articles met the inclusion criteria. Six types of interventions were identified that addressed depression, anxiety, or mental health–related quality of life: exercise or movement based, behavioral therapy and stroke education, behavioral therapy only, stroke education only, care support and coordination, and community-based interventions that included occupational therapy. Evidence from well-conducted research supports using problem-solving or motivational interviewing behavioral techniques to address depression. The evidence is inconclusive for using multicomponent exercise programs to combat depression after stroke and for the use of stroke education and care support and coordination interventions to address poststroke anxiety. One study provided support for an intensive multidisciplinary home program in improving depression, anxiety, and health-related quality of life. The implications of the findings for practice, research, and education are discussed.

40. Post-stroke depression and post-stroke anxiety: prevalence and predictors

Background: Epidemiological research on post-stroke affective disorders has been mainly focusing on post-stroke depression (PSD). In contrast, research on post-stroke anxiety (PSA) is in its early stages. The present study proposes a broad picture on post-stroke affective disorders, including PSD and PSA in German stroke in-patients during rehabilitation. In addition, we investigated whether lifetime affective disorders predict the emergence of PSD and PSA.

Methods: 289 stroke patients were assessed in the early weeks following stroke for a range of mood and anxiety disorders by means of the Structured Clinical Interview relying on the Diagnostic and Statistical Manual of Mental Disorders IV. This assessment was conducted for two periods: for post-stroke and retroactively for the period preceding stroke (lifetime). The covariation between PSD and PSA was investigated using Spearman-ρ correlation. Predictors of PSD and PSA prevalence based on the respective lifetime prevalence were investigated using logistic regression analyses.

Results: PSD prevalence was 31.1%, PSA prevalence was 20.4%. We also found significant correlations between depression and anxiety at post-stroke and for the lifetime period. Interestingly, lifetime depression could not predict the emergence of PSD. In contrast, lifetime anxiety was a good predictor of PSA.

Conclusions: We were able to highlight the complexity of post-stroke affective disorders by strengthening the comorbidity of depression and anxiety. In addition, we contrasted the predictability of PSA based on its lifetime history compared to PSD which was not predictable based on lifetime depression.

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41. Depression and anxiety symptoms post-stroke/TIA: prevalence and associations in cross-sectional data from a regional stroke registry

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42. Effect on anxiety and depression of a multifactorial risk factor intervention program after stroke and TIA: a randomized controlled trial
OBJECTIVES: Depression and anxiety related to stroke are caused by vascular lesions and psychological reactions. Treatment of vascular and modifiable behavioral risk factors reduces the risk of stroke and may also reduce the risk of emotional changes after stroke. We aimed to investigate whether a multifactorial risk factor intervention program in patients with first-ever stroke or transient ischemic attack (TIA) can influence post-stroke anxiety and depressive symptoms in patients one year post-stroke. METHOD: The study population consisted of first-ever stroke and TIA patients allocated in a randomized, evaluator-blinded, controlled trial to care as usual or a structured and multidisciplinary follow-up including intensive treatment of vascular risk. The primary endpoint (cognition) has previously been reported. The secondary endpoint, reported here, was changes in the Hospital Anxiety and Depression Scale (HADS) from baseline to 12-month follow-up. RESULTS: One hundred and ninety-five patients were randomized. The estimated difference between treatment groups, in changes in HADS, from baseline to 12 months was -1.32 (95% confidence interval: -2.61, -0.04; P = 0.044) in favor of the intervention group. One year post-stroke, 4/85 (4.7%) patients in the intervention group and 12/89 (13.5%) in the control group suffered from depression (P = 0.045), while 7/85 (8.2%) patients in the intervention group and 13/89 (14.6%) patients in the control group suffered from anxiety (P = 0.19). CONCLUSION: A structured, multidisciplinary, multifactorial risk factor program including vascular risk factor management may be associated with reduced HADS scores and a lower prevalence of depressive symptoms one year after stroke.

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43. Fatigue, psychological and cognitive impairment following transient ischaemic attack and minor stroke: A systematic review

Transient ischaemic attack (TIA) and minor stroke are characterized by short-lasting symptoms; however, anecdotal and empirical evidence suggests that these patients experience ongoing cognitive/psychological impairment for which they are not routinely treated. The aims were (i) to investigate the prevalence and time course of fatigue, anxiety, depression, post-traumatic stress disorder (PTSD) and cognitive impairment following TIA/minor stroke; (ii) to explore the impact on quality of life (QoL), change in emotions and return to work; and (iii) to identify where further research is required and potentially inform an intervention study. A systematic review of MEDLINE, EMBASE, PSYCINFO, CINAHL, the Cochrane libraries and the grey literature between January 1993 and April 2013 was undertaken. Literature was screened and data were extracted by two independent reviewers. Studies were included of adult TIA/minor stroke participants with any of the outcomes of interest: fatigue, anxiety, depression, PTSD, cognitive impairment, QoL, change in emotions and return to work. Random-effects meta-analysis pooled outcomes by measurement tool. Searches identified 5976 records, 289 were assessed for eligibility and 31 studies were included. Results suggest high levels of cognitive impairment and depression post-TIA/minor stroke which decreased over time. However, frequencies varied between studies. Limited information was available on anxiety, PTSD and fatigue. Meta-analysis revealed that the measurement tool administered influenced the prevalence of cognitive impairment: Mini-Mental State Examination 17% [95% confidence interval (CI) 7, 26]; neuropsychological test battery 39% (95% CI 28, 50); Montreal Cognitive Assessment 54% (95% CI 43, 66). There is evidence to suggest that TIA/minor stroke patients may experience residual impairments; however, results should be interpreted with caution because of the few high quality studies. Notwithstanding, it is important to raise awareness of potential subtle but meaningful residual impairments. (PsycINFO Database Record (c) 2016 APA, all rights reserved) (Source: journal abstract)
44. Management of anxiety and motor symptoms in Parkinson's disease

Parkinson’s disease (PD) is typically known for its cardinal motor symptoms, but a growing body of literature is recognizing a multitude of important nonmotor symptoms as well. Anxiety is one of the most common nonmotor symptoms of PD; unfortunately, neither the management of anxiety nor its influence on motor symptoms is well understood. While recent literature indicates a correlation between motor symptoms and anxiety in PD, it remains uncertain whether one symptom acts as the underlying cause of the other. This review considers the cyclic interaction between anxiety and motor symptoms in PD, each exacerbating the other when they coexist. It may be critically important to disentangle if one symptom serves as an underlying cause of the other, since this might dictate appropriate treatment. Neuroanatomical substrates as well as the treatments for both motor symptoms and anxiety are discussed in detail to consider the evidence-base for the management of PD.

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45. Natural history, predictors and associated outcomes of anxiety up to 10 years after stroke: the South London Stroke Register

Background: evidence on the long-term natural history, predictors and outcomes of anxiety after stroke is insufficient to inform effective interventions. This study estimates within 10 years of stroke: (i) the incidence, cumulative incidence, prevalence, and time of onset of anxiety. (ii) Predictors of anxiety and its association with depression. (iii) The association between anxiety 3 months after stroke and mortality, stroke recurrence, disability, cognitive impairment and quality of life (QoL) at follow-up. Methods: data from the South London Stroke Register (1995–2010). Patients were assessed at the time of the stroke, at 3 months, 1 year and then annually for up to 10 years. Baseline data included socio-demographics and stroke severity. Follow-up data included assessments for anxiety and depression (hospital anxiety and depression scale), disability, cognition and QoL. Multivariate regression was used to investigate predictors and associated outcomes of anxiety. Results: incidence of anxiety up to 10 years ranged from 17 to 24%. Cumulative incidence: 57%. Prevalence range: 32–38%. Amongst patients with anxiety, 58% were anxious at 3 months. 57–73% of patients with anxiety had co-morbid depression. Predictors of anxiety included age under 65, female gender, inability to work, depression treatment, smoking and stroke severity. Anxiety at 3 months was associated with lower QoL at follow-up. Conclusions: anxiety is a frequent problem affecting stroke survivors in the long term. Clinicians should pay attention to patients at risk of anxiety since it is associated with lower QoL and depression.

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46. Relaxation training after stroke: potential to reduce anxiety
Kneebone Ian Disability & Rehabilitation 2014;36:771-774.

Objective: To consider the feasibility of setting up a relaxation group to treat symptoms of post-stroke anxiety in an in-patient post-acute setting; and to explore the effectiveness of relaxation training in reducing self-reported tension. Method: A relaxation group protocol was developed in consultation with a multidisciplinary team and a user group. Over a period of 24 months, 55
stroke patients attended group autogenic relaxation training on a rehabilitation ward. Attendance ranged between one and eleven sessions. Self-reported tension was assessed pre and post relaxation training using the Tension Rating Circles (TRCs). Results: The TRCs identified a significant reduction in self-reported tension from pre to post training, irrespective of the number of sessions attended; \( z = -3.656, p < 0.001, r = -0.67 \), for those who attended multiple sessions, \( z = -2.758, p < 0.01, r = -0.6 \), for those who attended a single session. Discussion: The routine use of relaxation techniques in treating anxiety in patients undergoing post-stroke rehabilitation shows potential. Self-reported tension decreased after attendance at relaxation training. The TRCs proved acceptable to group members, but should be validated against standard anxiety measures. Further exploration of the application of relaxation techniques in clinical practice is desirable.

47. Systematic review of factors associated with depression and anxiety disorders among older adults with Parkinson’s disease
Depression and anxiety disorders have a substantial impact on the quality of life, the functioning and mortality of older adults with Parkinson’s disease (PD). The purpose of this systematic review was to examine the factors associated with the prevalence of depression and anxiety disorders among individuals with PD aged 60 years and older. Following a literature search in PubMed, PsycINFO, CINAHL, and EMBASE, 5 articles met the inclusion criteria (adults aged 60 years and older, individuals with PD, and with depression and anxiety disorders, and English-language peer reviewed articles) and were included in this review. These studies were conducted in the U.S (n = 3), in Italy (n = 1) and the U.K (n = 1). Findings indicated that autonomic symptoms, motor fluctuations, severity and frequency of symptoms, staging of the disease, and PD onset and duration were associated with the prevalence of depression and anxiety disorders among older adults suffering from PD. Despite the limited number of studies included in the review, depression and anxiety disorders are often unrecognized and untreated and the comorbidity greatly exacerbates PD symptoms. The identification of factors associated with the development of depression and anxiety disorders could help in designing preventive interventions that would decrease the risk and burden of depression and anxiety disorders among older adults with PD. (PsycINFO Database Record (c) 2016 APA, all rights reserved) (Source: journal abstract)

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48. Anxiety and depression after stroke: a 5 year follow-up
Purpose: The aim was to document the prevalence and predictors of anxiety and depression 5 years after stroke, across four European centres. Method: A cohort of 220 stroke patients was assessed at 2, 4 and 6 months and 5 years after stroke. Patients were assessed on the Hospital Anxiety and Depression Scale and measures of motor function and independence in activities of daily living. Results: At 5 years, the prevalence of anxiety was 29% and depression 33%, with no significant differences between centres. The severity of anxiety and depression increased significantly between 6 months and 5 years. Higher anxiety at 6 months and centre were significantly associated with anxiety at 5 years, but not measures of functional recovery. Higher
depression scores at 6 months, older age and centre, but not measures of functional recovery, were associated with depression at 5 years. Conclusions: Anxiety and depression were more frequent at 5 years after stroke than at 6 months. There were significant differences between four European centres in the severity of anxiety and depression. Although the main determinant of anxiety or depression scores at 5 years was the level of anxiety or depression at 6 months, this accounted for little of the variance. Centre was also a significant predictor of mood at 5 years. There needs to be greater recognition of the development of mood disorders late after stroke and evaluation of variation in management policies across centres.

49. Anxiety, Apathy and Depression in First-Time Stroke Survivors with Aphasia in the Post-Stroke Period
Jackson Maranda Christine Anxiety, Apathy & Depression in First-time Stroke Survivors With Aphasia in the Post-stroke Period 2013;:299 p.

Emotional disorders specifically, anxiety, apathy and depression, in the post-stroke period are prevalent, long lasting and detrimental. Aphasia, an acquired communication disorder, is experienced by 40% of all stroke survivors. As the leading cause for disability, stroke affects multiple aspects of the stroke survivors life. Moreover, physical disability, social isolation, and emotional distress further complicate stroke rehabilitation compromising recovery and increasing mortality. Seventy-one percent of stroke studies exclude stroke survivors with aphasia. Thus, the impact of emotional distress in aphasic stroke survivors remains a gap within the stroke literature. This study examined emotional distress in first-time stroke survivors with aphasia in the post-stroke period. A descriptive, cross-sectional study design using non-probability sampling was used. Participants were recruited from rehabilitation hospitals, the community and a stroke database. Using primary data collection a sample size of 16 stroke survivors was obtained. A battery of instruments assessing aphasia, physiological, sociological, and neuropsychological aspects of stroke recovery were administered in a 2-hour interview session. Within this sample of stroke survivors with aphasia, 68.8% reported anxiety, 100% reported apathy, and 43.8% reported depression. With the majority of the population reporting apathy mixed disorders were identified. Sixty-eight percent of stroke survivors screened for anxiety and apathy and 66.7% reported depression and apathy. The mean stroke severity score was 2.2. Forty-three percent were functionally independent, 93.8% had below average neuropsychological scores, and 62.5% had left hemisphere lesions. Ethnicity and gender was associated with depression. Chi square analysis (p = .041, Fishers exact test) and Mann Whitney U associate non-blacks (n = 8, Mdn = 6.0) with higher depression scores than blacks (n = 8, Mdn=2.5) (U = 12.000, z = -2.11, p = .03). Emotional distress is a pervasive in stroke survivors with aphasia. Thoughtful selection of instruments modified for this stroke population may effectively detect post-stroke emotions. Despite the small sample size, this study contributes to the body of research by screening for social isolation, apathy, and neuropsychological status within this stroke sub-population. Going forward, incorporation of social, neuropsychological and psychological screening as standard of care in facilities serving the stroke population, will improve stroke outcomes in the stroke survivor with aphasia.

Available online at this link (Open Access)

50. Impact of Anxiety on Health-Related Quality of Life After Stroke: A Cross-Sectional Study
Abstract: Objective: To examine the impact of anxiety on health-related quality of life (HRQOL) of stroke survivors. Design: Cross-sectional study. Setting: Acute stroke unit in a regional hospital. Participants: Patients (N=374) from an acute stroke unit. Interventions: Not applicable. Main Outcome Measures: The presence of anxiety was defined as a score of ≥8 on the anxiety subscale of the Hospital Anxiety Depression Scale. HRQOL was measured by the total score and 12 domain scores of the Stroke Specific Quality of Life (SSQOL) scale. Demographic characteristics and history of medical conditions were also recorded. Clinical characteristics were obtained using the following scales: National Institutes of Health Stroke Scale, Barthel Index, Mini-Mental State Examination, and Geriatric Depression Scale (GDS). Results: Eighty-six (23%) stroke survivors had anxiety. The anxiety group had significantly more women (62.8% vs 35.1%), higher GDS scores (7.5±4.5 vs 3.5±3.6), and lower scores for total SSQOL (3.9±0.6 vs 4.5±0.6) and SSQOL domains of energy (2.0±1.2 vs 3.4±1.4), mood (3.6±1.5 vs 4.6±0.9), personality (3.4±1.7 vs 4.4±1.1), and thinking (2.4±1.2 vs 3.5±1.4), after adjustment for sex and GDS score. In subsequent multivariate regression analysis, the Hospital Anxiety Depression Scale anxiety score was negatively associated with the SSQOL total score (r=−.154) and 5 of the 12 domain scores, namely energy (r=−.29), mood (r=−.102), personality (r=−.195), thinking (r=−.136), and work/productivity (r=−.096). Conclusions: Anxiety has a negative effect on HRQOL of stroke survivors, independent from depression. Interventions for anxiety should improve stroke survivors' quality of life.

Available online at this link

51. Treating anxiety after stroke using cognitive-behaviour therapy: Two cases
Kneebone Ian I. Neuropsychological Rehabilitation 2013;23:798-810.

Anxiety disorders are common after stroke. However, information on how to treat them with psychotherapy in this population is highly limited. Modified cognitive-behaviour therapy (CBT) has the potential to assist. Two cases of individuals treated with modified CBT for anxiety after stroke are presented. The modification was required in light of deficits in executive and memory function in one individual and in the context of communication difficulties in the other. The anxiety symptoms were treated over seven and nine sessions, respectively. Both participants improved following the intervention, and these improvements were maintained at 3 month follow-ups. Further case-series and randomised controlled designs are required to support and develop modified CBT for those with anxiety after stroke.

Available online at this link

52. Cognitive behavioral therapy for depression and anxiety in Parkinson’s disease: A clinical review

Parkinson’s disease (PD) is the second most common neurodegenerative disorder. It is generally defined by its progressive motor features; but increased attention is being paid to its non-motor neuropsychiatric symptoms, which profoundly impact quality of life for patients and caregivers. Anxiety and depression are particularly problematic and are the strongest predictors of quality of life in PD. Recent research has focused on non-pharmacological approaches to treating depression and anxiety in patients with PD. Cognitive-behavioral therapy (CBT) is a potentially efficacious non-pharmacological treatment for mood and anxiety symptoms associated with PD. Accordingly, this review examines empirical studies of CBT-based treatments for depression and
anxiety symptoms in PD. Medical Subject Headings were used in searches of PsychInfo and PubMed of English-language articles published in peer-reviewed journals, resulting in the identification of 10 articles. Four additional articles were identified from the references of these articles and upon the suggestions of experts, for 15 articles in all. Results of individual studies varied significantly; however, the randomized controlled trials showed encouraging results and support the need for further investigation of the utility of CBT for depressed and anxious patients with PD. CBT is potentially a useful treatment for patients with PD and comorbid depression and/or anxiety, but more systematic research will be necessary to measure its effects. (PsycINFO Database Record (c) 2016 APA, all rights reserved) (Source: journal abstract)

53. Depression and anxiety screening after stroke: adherence to guidelines and future directions
Morris Reg Disability & Rehabilitation 2012;34:733-739.

Purpose: This article examines practical approaches to increasing rates of screening for depression and anxiety in hospital-based stroke services. Method: The literature on depression and anxiety following stroke is briefly reviewed together with evidence relating to screening. A small-scale trial of an educational and support package to improve screening rates compared 30 consecutive admissions before and after the intervention. An extended commentary on the outcome considered alternative approaches to improving screening. Results: The literature review confirmed that depression after stroke has multiple adverse effects and that screening is not universally applied. There has been less research into anxiety after stroke, but it is likely that anxiety screening is also incomplete. The trial of the intervention to promote screening demonstrated strong trends towards improvement for depression (23.3%; odds ratio 2.67; χ² p == 0.067) and a trend for anxiety (16.7%; odds ratio 1.96; χ² p == 0.20). Conclusions: Education and training about depression and anxiety screening and access to screening materials improved rates of screening to a limited degree. An extended commentary explored how screening rates might be further improved by considering the intervention strategy, the staffing model, the training approach and the screening methods themselves. Finally, consideration is given to treatment approaches for mood disorders.

54. Interventions for treating anxiety after stroke

The article presents the summary of a review comprising of two studies which evaluated the use of pharmacological, psychological or complementary or alternative therapies for the treatment of stroke or anxiety symptoms. Findings revealed that stroke and anxiety disorders remain a common problem even after several years and suggest that pharmaceutical therapy may be effective in reducing anxiety symptoms in stroke patients. Also discussed are the implications of these studies for research.

55. Mood disorders in Parkinson’s disease
Tan Louis C. S. Parkinsonism & Related Disorders 2012;18:.

An increasing emphasis has been placed on the identification and management of non-motor features of Parkinson’s disease (PD). Of the behavioural disorders in PD, mood disorders are
amongst the most common and can occur in both early and late stages of PD. In some cases, these problems may even precede the development of motor symptoms of PD. These disorders have a major impact in the quality of life and affect daily function. This review will focus on depression, anxiety and apathy, and will discuss the epidemiological, clinical features, diagnosis and management of these disorders. The diagnosis and evaluation of these problems remain a challenge in view of the overlapping symptoms between these disorders and also with the clinical features of PD. The development and validation of diagnostic criteria and rating scales for these disorders remain a priority particularly in relation to anxiety and apathy. Another gap in the management of these disorders is the limited empirical evidence for the treatment of these problems. There is therefore an urgent need for systematic studies in the pharmacological and non-pharmacological management of these disorders to enable a holistic and evidence-based approach to the management of mood disorders in PD. (PsycINFO Database Record (c) 2016 APA, all rights reserved) (Source: journal abstract)

56. **Screening for depression and anxiety after stroke: developing protocols for use in the community**  
Kneebone Ian I. Disability & Rehabilitation 2012;34:1114-1120.

**Purpose:** To develop screening protocols to detect depression and anxiety after stroke in a community setting and train therapists to administer them. **Method:** Psychologists and a community therapist met to design a system suitable for screening for anxiety and depression in all those with stroke, including people with cognitive and/or communication problems. Other therapists and a local user group were also consulted. Therapists were then trained in the use of the protocols. The ability to enact the protocols was assessed via case vignettes and staff experience, over a month-long trial. **Results:** It was considered appropriate for community therapists to screen patients and to do this within 4 weeks of first contact. Two protocols were designed, one for patients without significant communication/cognitive deficits and one for patients with these difficulties. Therapists applied the protocols with accuracy to the case vignettes and rated the training highly. No challenges in applying the protocols in the clinical setting were reported over an initial 1-month trial. **Conclusion:** Two protocols to screen for depression and anxiety after stroke have been developed. These appear feasible for use when trialled via case vignette and in clinical practice. Further research might consider the usefulness of the screens in detecting actual clinical disorder and developing better screens to identify anxiety after stroke, particularly in those with a cognitive and/or communication disorder.

Available online at this link  
(Accepted manuscript)

57. **The Influence of Resistance Exercise Training on the Levels of Anxiety in Ischemic Stroke**  
Aidar Felipe José Stroke Research & Treatment 2012;:1-6.

Available online at this link

58. **Single music therapy session reduces anxiety in patients with stroke**  
Objective: Music therapy is using music as a treatment method to provide mental, social and emotional wellness in patients with somatic and mental sickness. Music therapy alters emotional mood positively, decreases stress and pain perception and causes relaxation in patients with chronic diseases. The aim of this study was to investigate the effect of one session music therapy on anxiety in patients with stroke. Methods: Thirty one patients with stroke and 53 healthy volunteers with a mean age of 59.9±11.8 and 56.5±12.8 years, respectively were included in the study. The level of anxiety was evaluated with State-Trait Anxiety Inventory (STAI). Music therapy was applied during 50 minutes for one session to the groups consisting of 6-8 individuals. Results: No significant difference in anxiety levels was detected before music therapy between stroke patients and healthy individuals. After the therapy, significant improvements in anxiety in both groups were observed. No significant difference in differentiation ratio of anxiety levels was found between the groups. Conclusion: Music therapy reduces anxiety in patients with stroke and healthy individuals. This is a safe and cheap method and can support participation of the patients in the rehabilitation program actively. (J PMR Sci 2011;14:12-5) Keywords: Music therapy, stroke, anxiety, rehabilitation

59. Anxiety, depression, and psychological well-being 2 to 5 years poststroke

Objectives: We sought to explore psychological well-being and the psychosocial situation in persons with stroke, 2 to 5 years after discharge from a specialized rehabilitation hospital. Methods: The Hospital Anxiety and Depression Scale; the 30-item General Health Questionnaire; and a questionnaire were mailed to 255 former patients. Results: A total of 64% answered (36% women), and the average age was 58 years. The Hospital Anxiety and Depression Scale identified problems in 47% (anxiety in 36% and depression in 28%) and 30-item General Health Questionnaire in 54%. About half had experienced periods of anxiety, depression, or both since discharge. Most were satisfied with support by family/friends (88%), home ward (68%), and community therapy services (57%). Marital status was as in the general population. Conclusions: Long after stroke, almost half of the investigated patients with stroke had psychiatric problems according to the questionnaires. This is higher than in the general population but is comparable with some other chronic, somatic populations in Norway.

60. Anxiety and depression in the first six months after stroke. A longitudinal multicentre study
De Wit L. Disability & Rehabilitation 2008;30:1858-1866-.

Purpose. To document the prevalence, severity and time course of anxiety and depression in stroke rehabilitation patients in four European countries. Method. At two, four and six months post-stroke, the prevalence and severity of anxiety and depression were determined in 532 consecutively recruited patients, using the Hospital Anxiety and Depression Scale. Time course of prevalence and severity was examined, using Cochran-Q and Friedman-tests, respectively. We identified whether the numbers of anxious/depressed patients at each time point comprised the same individuals. Results. Prevalence of anxiety ranged between 22% and 25%; depression between 24% and 30%. Median severity ranged between 4 and 5. No significant differences between centres occurred (p > 0.05). Prevalence of both disorders was not significantly different over time. Severity of anxiety decreased between four and six months; severity of depression remained stable. About 40% of the patients with initial anxiety remained anxious at six months. Some 11% and 7% of those initially not anxious became anxious at four or six months after
stroke, respectively. Depression showed a similar pattern. Conclusions. Despite differences in patient profiles and intensity of rehabilitation, no significant differences occurred between centres in prevalence and severity of both disorders. Anxiety was almost as common as depression and additional patients became anxious/depressed at each time point.

**Databases searched:**
Cochrane Library, PubMed, BNI, CINAHL, PsycINFO

**Search terms:**

Apologies, given the short deadline, I didn’t manage to capture all the search terms I used in each database, but here is what I used in PsycINFO:

<table>
<thead>
<tr>
<th>#</th>
<th>Database</th>
<th>Search term</th>
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</thead>
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<td>1</td>
<td>PsycINFO</td>
<td>(((anxiety AND (stroke OR parkinson*)) AND systematic review).ti,ab [DT FROM 2010] [Peer reviewed] [Languages English]</td>
<td>34</td>
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