| Table 1a - Characteristics of included studies investigating factors influencing medication adherence | | | | | | | | | | | |
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| **Authors, Year** | **Title** | **Country** | **Type of study** | **Aims and objective** | **Sample Size** | **Population description** | **Inclusion/ Exclusion Criteria** | **Communicative abilities of participants** | **Measures of medication adherence** | **Outcome measures** | **Key findings** |
| **Bushnell et al., 2010** | Persistence with stroke prevention medications 3 months after hospitalization | United States of America | Quantitative  Observational cohort design. | To measure longitudinal use of stroke prevention medications following stroke hospital discharge. The authors hypothesized that a combination of patient-, provider-, and system-level factors influence  medication-taking behaviour. | N= 2598. | Patients 18 years or older admitted with ischemic stroke or transient ischemic attack | Study inclusion criteria were age 18 years or older; hospitalization for a primary diagnosis of acute ischemic stroke or transient ischemic attack; direct hospital admission based on physician evaluation or arrival through the emergency department; patient or legally authorized representative consent to participate; and patient inclusion in the GWTG-Stroke program | Subjects who could not respond because of illness severity, speech or language deficits, or death, interviewers spoke with an informed proxy, such as a family member or caregiver | Medication persistence was determined by comparing the complete discharge medication list with the current medications actually used by the subject. Subjects who reported discontinuing a medication were asked whether they chose to stop the medication or were instructed to do so by a physician. If discontinuation was self-initiated, then subjects were asked to select from a list the response that most closely represented their reason for discontinuation: adverse effects, cost, medication not helping, or other | * Regimen persistence, including use of antiplatelet therapies, warfarin, antihypertensive therapies, lipid-lowering therapies, or diabetes medications, from discharge to 3 months. Reasons for nonpersistence ascertained. | * Patient-level factors independently associated with persistence included increasing age, absence of atrial fibrillation, and the presence of hypertension, diabetes mellitus, dyslipidemia, and coronary artery disease/ prior myocardial infarction. These factors were significant in both multivariable models (Table 4). * However, persistence was independently associated with subject-reported understanding of the reasons why prescribed medications should be taken (OR, 1.81; 95% CI, 1.19-2.76; P=.006) and with how to obtain medication refills (OR, 1.64; 95% CI, 1.04-2.58; P=.03) in the multivariable model with self-responders only. * Having some type of medication insurance was reported by 87.6% of subjects and was independently associated with persistence in the model combining subject and proxy responders * Lower disability was associated with higher persistence when modified Rankin Scale scores were dichotomized as a good or bad outcome in the subject plus proxy model (OR, 1.54; 95% CI, 1.24-1.90; P .001) but less significant in the subject responder only model (OR, 1.28; 95% CI, 0.97-1.69; P=.08) |
| **Coetzee et al., 2008** | Predicting compliance with treatment following stroke: A new model of adherence following rehabilitation. | Australia | Quantitative  Observational cohort design. | The principal aim of this study then was to develop a model of adherence behaviour in stroke patients that identifies factors that may contribute to discontinuation or changes to treatment advice | N= 55 | Twenty-five stroke patients and 30 amputee patients who had completed a rehabilitation program at Melbourne Rehabilitation Centre were investigated (TAS). | Patients who were from a non-English speaking background or otherwise unable to comprehend the consent form and a list of key words on the questionnaires were excluded from the study. Patients who were unable to understand a list of key English words or had a history of dementia, epilepsy, or other neurological disorder, were excluded from the study | The Comprehensive Assessment of Prospective Memory and The Everyday Functioning Scale (EFQ) were used to assess memory, concentration, planning and organisation, and language impairments. Aphasia measured using Sheffield Screening Test for Acquired Language Disorders The revised version of the National Adult Reading Test was used as an estimate measure of general intellectual functioning. The Rey Auditory-Verbal Learning Test (RAVLT) Version II (Rey, 1964) was used as a measure of verbal learning. | Patient responses to the Treatment Assessment Schedule; pill counts | * Medication adherence * Assessment of emotional and cognitive dysfunction, beliefs about medication, and social support. | * Using a regression analysis approach, it was demonstrated that cognitive impairments, emotional and social difficulties, beliefs about the importance of medication, and care received at home with managing medications all influenced adherence in stroke patients. * Impairments in emotion and cognition, beliefs about medications, and social support at home together contributed to 77.7% of variance in pill count figures * Failure to   find a significant result for medicine beliefs in the  amputee group suggests that medication intake in  stroke may in part be governed by a lack of awareness of the importance of medication in effective  recovery. As many as 40% of stroke patients  reported on the TAS to have no understanding of  the importance of their prescribed medicines.   * Social support received   at home, as measured by stroke patient self-reports  significantly improved adherence in this patient group   * Emotional dysfunction was the best predictor of poor adherence in both patient groups. |
| **Jamison et al., 2017** | Barriers and facilitators to adherence to secondary stroke prevention medications after stroke: Analysis of survivors and caregivers views from an online stroke forum | England | Qualitative thematic analysis of posts about secondary prevention medications, informed by Perceptions and Practicalities Approach. | To identify barriers and facilitators of  medication adherence in patients with stroke along with  their caregivers | N=84 | 84 participants: 49 stroke survivors, 33  caregivers, 2 not stated | Posts written by the UK stroke survivors and their family members taking part in the online forum of the Stroke Association, between 2004 and 2011. | Posts from caregivers of patients with severe disabilities such as aphasia included | N/A | * Perceived barriers and facilitators to medication adherence among users of an online stroke forum | Perceptions reducing the motivation to adhere included dealing with medication side effects, questioning doctors’ prescribing practices and negative publicity about medications, especially in regard to statins. Caregivers faced difficulties with ensuring medications were taken while respecting the patient’s decisions not to take tablets. They struggled in their role as advocates of patient’s needs with healthcare professionals. Not experiencing side effects, attributing importance to medications, positive personal experiences of taking tablets and obtaining modification of treatment to manage side effects were facilitators of adherence. Key practical barriers included difficulties with swallowing tablets, dealing with the burden of treatment and drug cost. Using medication storage devices, following routines and getting help with medications from caregivers were important facilitators of adherence. |
| **Sumbul-Sekerci et al., 2023** | Medication management and treatment adherence in Parkinson's disease patients with mild cognitive impairment | Turkey | Quantitative  Cohort Study | To investigate the  effect of cognition on medication management and adherence in patients with Parkinson’s Disease with Mild Cognitive Impairment. To investigate which  cognitive domains might predict medication management  performance | N= 58 | 26 patients with Parkinson’s Disease with mild Cognitive Impairment and 32 idiopathic PD patients without cognitive impairment) | Inclusion criteria were a diagnosis of PD according to United Kingdom PD Society Brain Bank criteria and having at least primary school education. PD-MCI was diagnosed according to MDS Level 2 diagnostic criteria. Exclusion criteria were dementia (diagnosis based on Movement Disorders Task Force proposed criteria [10]) significant psychiatric or systemic diseases, excessive daytime sleepiness, vision problems, and taking anticholinergic medications that may impair cognition. Patients who received deep brain stimulation, apomorphine infusion, and levodopa/carbidopa intestinal gel treatment were excluded from the study | Detailed neuropsychological tests were conducted including 2 tests for each of the five cognitive domains (attention–working memory, executive functions, language, memory, and visuospatial functions). A test performance that was 1.5 SD below the norm for age and education for a test was accepted as impairment | Medication taking behaviours were evaluated using two different  methods based on the performance (medication management ability assessment) and self-reporting (adherence scale). | * A detailed neuropsychological testing battery (including   tests for attention and working memory, executive functions, language, visuospatial functions, episodic memory) and various prospective memory tasks were applied to the patients;   * Medication taking behaviours. | * The PD-MCI group obtained significantly lower scores in medication management assessment and made more   mistakes on following prescription instructions   * Cognitive areas predicting success in medication management performance were language,   event-based prospective memory and visuospatial functions.   * There was no significant difference between the two groups’   self-reporting of adherence. |

| Table 1b - Characteristics of included studies evaluating current interventions targeting medication adherence | | | | | | | | | | | | |
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| **Authors, Year** | **Title** | **Country** | **Type of study** | **Aims and objective** | **Sample Size** | **Population description** | **Inclusion/ Exclusion Criteria** | **Communicative abilities of participants** | **Measures of medication adherence** | **Intervention** | **Outcome measures** | **Key findings** |
| **Nichols et al., 2017** | Assessing Mobile Health Capacity and Task Shifting Strategies to Improve Hypertension Among Ghanaian Stroke Survivors | Ghana | Mixed-Methods | To explore the barriers, facilitators and recommended mHealth intervention strategies to control hypertension in poststroke survivors | N=228 | Stroke survivors completed study surveys  Focus groups were conducted with stroke survivors, caregivers and community leaders | Thirty-four stroke survivors with aphasia without a proxy were excluded. | Stroke survivors with aphasia with a proxy were included | A 7-item modified Morisky Medication Adherence  Scale was used to assess medication adherence among the participants. | Automated text, phone call or email service | * Categorise feasibility and stakeholder attitudes towards mobile health services | * 99.5% of participants expressed a willingness to participate in a research study involving mobile health services, and 96.5% thought such a study would be worthwhile to conduct. * Barriers were identified at each level of the Social ecological model while facilitators were not specifically stated during focus groups. * Concerns over cost, training   and continuity of connectivity were expressed by participants |
| **Oyesanya et al., 2020** | A Medication Management Intervention for Patients and Families with SCI and ABI | United States | Quantitative  Retrospective analysis of a practice re-design, using a quasi-experimental, matched-pair design | To develop  and determine the preliminary efficacy of a pre-discharge  educational intervention designed to increase perceived  knowledge and perceived confidence for post-discharge medication management for patients with SCI and families of  patients with SCI or ABI;  to determine predictors of perceived knowledge and perceived confidence at 60-days post-discharge;  to explore post discharge medication management issues and tools used to manage medications at 60 days post discharge | N=207 | All included patients has a diagnosis of Spinal Cord Injury (SCI). Of the family members included 66 of these were family members of those with SCI, with the remainder being family members of those with acquired brain injury. | Patients were eligible to participate in this study based on the following inclusion criteria: (a) diagnosed with SCI, (b) receiving inpatient rehabilitation at the participating hospital, and (c) plans to be discharged to home. Family members met inclusion criteria if they were an anticipated family caregiver for an admitted patient with ABI or SCI who was planned for discharge home. Patients with ABIs were excluded from participating due to pre-discharge cognitive impairments that may have caused problems with retaining information provided in the intervention. | Patients with ABI excluded due to cognitive impairment however family caregiver for an admitted patient participated | Adapted existing medication management and adherence  instruments | Pre-discharge medication management educational intervention | * Primary outcomes include medication management; perceived knowledge; perceived confidence. * Secondary outcomes include medication problems since discharge, usage of medication management tools | * Both patient and family member perceived knowledge in the treatment group was significantly higher at post-test relative to pre-test and higher at 60-days post-discharge relative to pre-test. No differences in perceived knowledge   were found between post-test and 60-days post-discharge.  Perceived confidence  was significantly higher at post-test relative to pre-test and higher at 60-days post-discharge relative to pre-test. No differences in perceived knowledge  were found between post-test and 60-days post-discharge.   * At 60-days post-discharge, findings showed treatment   group patients had significantly less perceived knowledge  and perceived confidence than control group patients, even  when controlling for demographic covariates. It is also important to note that treatment group patients reported significantly less success in taking medications daily before the time   * of the study compared to control group patients * At 60-days post-discharge, treatment   group patients and family members were more likely to use a  medication list and a pillbox to manage the patient’s medications |
| **Tellier et al. 2020** | Use of an electronic pillbox by older adults with mild Alzheimer’s disease: Impact on medication administration and adherence | Canada | Quantitative  Multiple baseline study with an A1BA2 design across tasks (A1 = no training, no electronic Medication Management Device (eMMD); B = training with eMMD; A2 = no training, daily use of eMMD). | To evaluate the impact of an eMMD on the independence of older adults with AD, more specifically on medication administration and adherence. | N=4 | Older adults with a diagnosis of Alzheimer’s disease | To be eligible for the study, participants had to have been diagnosed with probable early-stage (mild) AD by their doctor according to DSM-5 criteria and have a problem with medication administration (support of a caregiver needed and/or history of a missed dose and/or mixed medication). Participants had to be aged 65 years or older and take medications in pill form because this was the only format supported by the technology used (eMMD). Candidates with a diagnosed mental illness were excluded. | A battery of communication assessments were carried out, including: Pyramids & Palm Trees test,  Boston Naming Test and test of  verbal fluency | Medication adherence was evaluated from the log automatically generated by the eMMD. | Use of an Electronic Medication Management Device which is commercially available and designed specifically for those with Parkinson’s Disease | * Independence with medication administration * Independence with untrained task * Medication adherence | * All participants were able to learn to use the eMMD within 11 training sessions * Results showed a significant   overall improvement in independence with medication administration while independence in the  untrained task did not change   * all participants maintained good adherence, i.e., above the   80% cut-off |
| **Kim et al. 2022** | Improving medication adherence in isolated patients with cognitive impairment using automated telephone reminders | Korea | Randomised Clinical Trial | To investigate whether an automated  telephone reminder service would improve medication adherence and whether the reminder  service would improve cognitive function in these patients | N=29 | Patients aged 65 and older, diagnosed with mild cognitive impairment or Alzheimer’s disease | Enrolled patients aged 65 and older who were diagnosed with mild cognitive impairment (MCI) or AD, were taking medication, and lived alone or with a cognitively impaired spouse. | MMSE fluency and naming results provided | Medication adherence was measured using pill counts | The telephone-based reminder service offered using  home telephones | * The primary outcome measure was difference in mean monthly medication adherence between the 2 groups. * Secondary outcome measure was the difference in the degree of change in cognitive function between groups | * There was no difference in medication adherence between the 2 groups when including all the participants. * After subgroup analysis, participants who answered greater than 70% of reminder calls showed significantly higher mean medication adherence compared to the control group. * There were no significant differences in cognitive function scores between the 2 groups |