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# Developing a profile of activities of daily living for bipolar disorder: a systematic review protocol and meta-analysis

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## ABSTRACT

**Introduction** Bipolar disorder (BD) is a severe mental health disorder that affects 2% of the adult population. Individuals with this disorder are at a higher risk for morbidity and functional difficulties. They may also experience significant challenges in their activities of daily living (ADLs). This systematic review will identify all available studies that examine subsets of ADLs that impact individuals with BD.

**Methods and analysis** MEDLINE, Embase, CINAHL and APA PsycINFO will be searched to identify observational studies that examined functioning, independence or performance across a variety of ADLs. Title and abstract, full-text screening and a risk of bias assessment will be conducted in duplicate. An overarching table that summarises the level of functioning across different ADLs or an 'ADL profile' will be developed, and if there are sufficient data, these will be separated based on the phases of BD, such as manic/hypomanic, depressed and euthymic.

**Ethics and dissemination** As this systematic review uses information from previous literature, this review does not require ethics approval. This review will help identify the trends in daily activities that individuals struggle with and can help healthcare practitioners identify specific areas of need for support. We plan to disseminate the results in a peer-reviewed journal and conferences targeting occupational therapists and mental health clinicians.

**PROSPERO registration number** CRD42021255089.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This study employs a broad search strategy from multiple large databases, including searching reference lists of the included studies and employing controlled vocabulary terms for each database.
⇒ Many studies currently only report bipolar disorder (BD) as a whole without subgroup analyses (eg, euthymic, depressive or manic), which may impact the interpretation of the results.
⇒ Many articles related to measuring activities of daily living will be observational studies that could be prone to bias and confounding data, which may limit conclusions to the general BD population.

## INTRODUCTION

Bipolar disorder (BD) is a severe and chronic mental health disorder characterised by recurrent mood episodes ranging from depressive to manic states and changes in energy levels.[1] There are two major forms of BD, including bipolar I disorder (BD-I), which involves mood disturbances as a manic episode with a hypomanic episode or depressive episode, whereas bipolar II disorder (BD-II) involves at least a depressive episode paired with a hypomanic episode.[1] When individuals are not experiencing mood disturbances, they would be in a euthymic state. BD typically presents in early adulthood and is estimated to have a lifetime prevalence of 0.6% for BD-I and 0.4% for BD-II worldwide.[2] Lifetime prevalence of BD in the USA was estimated at 1.0% and 1.1% for BD-I and BD-II, respectively.[2] Individuals with BD also have an increased risk of comorbid mental health disorders and physical illnesses.[3] They may also be at high risk of premature mortality due to suicide and various medical illnesses such as circulatory or respiratory diseases than the general population.[4 5] From a meta-analysis by Hayes *et al*,[4] the standardised mortality ratio (SMR) was 2.05 for all-cause mortality, with suicide and unnatural death comprising the highest SMRs, at 14.44 and 7.42, respectively. BD also has high costs on society. In 2009, the annual cost of BD was estimated at US$151 billion in the USA.[6] The majority of these costs are attributed to indirect costs, such as living in institutions and treatment related to functioning rather than direct treatment of symptoms.[6 7]

BD can greatly disrupt functioning in day-to-day activities across all life domains, including, but not limited to, disruptions in basic functioning, work and social roles.[8–10] BD especially impacts a person's activities

of daily living (ADLs), which includes any fundamental activities and routine sets of tasks that are relevant to independent functioning in everyday life, whether it involves self-care, homemaking, work or leisure.[11] It is often distinguished into two types of ADLs: basic activities of daily living (BADLs) and instrumental activities of daily living (IADLs) or extended activities of daily living (EADLs).[12 13] BADLs typically involve basic personal care activities such as mobilisation, feeding, dressing, grooming and toileting.[14] IADLs or EADLs typically encompasses higher-level activities, such as managing transportation, handling finances, shopping, meal preparation, home maintenance and managing medications.[13 14]

Original research studies looking at mental health and functioning have found that patients with BD often have significantly decreased functioning and performance in ADLs. Numerous researching studies have found significantly decreased functioning in ADLs.[9 15–17] Even after remission from BD, studies report decreased ADL performance and participation in the BD population, where 30%–60% of individuals never seeing a return to full functioning.[18] Decker *et al*[19] examined 43 patients in remission, and they found that functioning in daily life activities in these patients remained significantly impaired.[19] For 20%–50% of those individuals, the dysfunctions manifested through increased physical effort, fatigue or disorganisation.[19] Therefore, BD has a significant impact on daily life functioning, even when symptoms are minimal. Also, the recovery trends imply that absence of symptoms does not guarantee restored functioning; thus, individuals who are no longer receiving direct care for BD often continue to contribute to high societal costs.[6 7] Therefore, it is important to consider which areas of functioning in day-to-day activities are most impacted to further reduce societal costs.

In current literature, BD is often studied in terms of social relationships and employment. Studies have found that social functioning is impacted in various ways, such as decreased social interactions and feelings of social discomfort.[20 21] They also may have impacted relationships with family, relatives and marital relationships.[20 22] Likewise, BD appears to impact work employment, where there is a 40%–60% rate of employment, and if employed, they may be more likely to take days off and underperform in their employment.[23 24] Nevertheless, people often need to participate in their day-to-day activities, such as household tasks, finances and personal care. If an individual's ability to manage their daily routine is impacted, then they may have difficulties maintaining their relationships and/or work roles.

Despite the general interest in ADL functioning across BD diagnoses, it is unknown which ADLs are most involved in BD or if there are any trends in ADL functioning. A growing number of studies have examined specific ADLs individuals with BD have difficulties with.[19 25 26] There have also been primary studies examining how functioning across various ADL domains compares to work and social functioning.[9 16 27] However, there is no current systematic review that summarises the findings of these studies in terms of the level of ADL functioning in subgroups of ADLs, such as household tasks, personal care and managing finances. This systematic review will be conducted to help inform healthcare practitioners about the types and subgroups of ADLs that patients with BD typically struggle with, and the extent of ADL independence or performance that patients with BD typically have. Studying the level of independence for specific ADLs can help inform practical and therapeutic approaches in therapeutic settings by giving clinicians targeted areas for intervention planning. There are two questions that will be addressed in this upcoming review:

1. What does the typical ADL profile look like for individuals with a BD?
2. Which ADLs do individuals with BD typically have the most difficulties for functioning?

## METHODS

### Study registration

This systematic review has been registered on the International Prospective Register of Systematic Reviews with registration number CRD42021255089. The protocol has been prepared using the Preferred Reporting Items for Systematic reviews and Meta-Analyses for Protocols.[28]

### Search strategy

All articles will be collected from the following databases: Ovid MEDLINE, Embase, APA PsycINFO and CINAHL (Ebsco). A search strategy was developed with the aid of a health systems librarian. The search strategies were also reviewed using the PRESS 2015 Guideline Evidence-Based Checklist.[29] In general, the following search terms and variants of these terms will be used to acquire studies: "activities of daily living", "functional independence" and "bipolar disorder". This search strategy incorporated Boolean searching, truncation and adjacency. Controlled vocabulary terms were also included, such as Medical Subjects Headings, CINAHL Subject Headings and Embase's Emtree. See online supplemental appendix A for the search strategy that was created for each database. Due to the risk of missing studies, searching reference lists of other included studies will identify relevant published studies that did not appear from the search strategy. The review management software Covidence will collect all studies that pass the first and second levels of screening.[30] Data collection is anticipated to start in March of 2022 and to be completed by March 2023.

### Inclusion criteria

Only original primary articles published in peer-reviewed journals will be included. Primary articles include any observational studies, including case–control, cross-sectional and cohort studies, but if relevant experimental studies are found, they will also be included. The article must be available in English. Non-English articles that appear from the search will be grouped under 'studies awaiting classification' in the Preferred Reporting Items

for Systematic reviews and Meta-Analyses (PRISMA) flow diagram to inform readers of the availability of other potentially relevant reports.[28] No restrictions will be placed on the article's year of publication.

With regard to the patient population, the study must include patients with BD aged 18 or older. Patients with BD include individuals who were diagnosed with one of the following based on the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V or DSM-IV): BD-I, BD-II, cyclothymic disorder, and unspecified bipolar and related disorder.[1] This study will also review studies with patients that have bipolar-specific states, such as euthymia or bipolar-related depressive symptoms, or bipolar-related cognitive deficits.

The inclusion criteria for the study also considers the functional performance or independence in ADLs, including basic and instrumental/extended ADLs. BADLs encompass any self-care activities, such as mobility, feeding, dressing, personal hygiene or toileting. Instrumental ADLs may encompass transportation, managing finances, shopping, meal preparation, household management or managing medications. To measure functional performance in ADLs, this review may include a variety of measures such as the UCSD Performance-Based Skills Assessment,[31] Lawton IADL scale,[32] Katz Index of Independence in Activities of Daily Living,[33] Performance Assessment of Self-Care Skills,[34] Functioning Assessment Short Test[35] and any other relevant performance-based measures that have been previously validated in adult or older adult populations. Self-reported measures may also be used such as the Activities of Daily Living Questionnaire.[19] Distinctions will be made between performance-based data and self-reported data.

### Exclusion criteria

Studies will be excluded if they do not examine functional performance in terms of ADLs. They will also be excluded if ADL performance or independence is measured across multiple ADLs, meaning that it does not describe the participant's functioning in specific ADLs such as grooming or managing medications. Studies will also be excluded if they solely focus on work or employment or social functioning while disregarding BADLs or IADLs, as there are currently studies on social functioning, work and relevance to BD.

Studies will be excluded if they report ADL performance or functioning globally across other mental health disorders, such as reporting ADL performance jointly with schizophrenia or major depressive disorder. Studies examining populations with BD and comorbidities will be excluded. Examples of comorbidities are neurological conditions, cancer diagnoses, substance abuse disorders, developmental delays or other mental health disorders. Articles that study comorbidities and BD without differentiating between the disorders are excluded, as studies that investigate comorbidities may also influence ADL performance. Likewise, studies that measure pharmacological or non-pharmacological treatments will be excluded as the purpose of this review was to examine ADLs rather than medical effects.

### Screening and selection process

Study selection will occur in duplicate and will be conducted with two screening levels to determine if the articles meet the inclusion criteria. For the first level of screening, two reviewers will independently conduct the search strategy and will review all the titles and abstracts from electronic database searches to screen for relevant studies. For the second level of screening, the two reviewers will examine the full articles that passed the first level of screening to determine if they meet the inclusion criteria. Both levels of screening will occur in duplicate. Disagreements with articles meeting the inclusion criteria will be resolved by consensus or in consultation with a third reviewer, if necessary. The rationale for excluding any of the studies will be documented, and a 'characteristic of excluded studies' will be made available for readers in the final review.

### Data extraction

Researchers will independently collect all the relevant data from the articles that passed the first level of screening and record them on the review management software Covidence.[30] A data extraction form will be used to collect information. In this form, the following information will be collected: (1) name of author(s); (2) year of publication; (3) country of origin; (4) study design (eg, cross-sectional study or cohort study); (5) population (BD diagnosis and/or symptoms); (6) average duration of the illness; (7) ADL assessment(s) used; (8) type of ADL assessment used (self-reported, performance-based or mixed); (9) ADLs examined and the respective level of functioning or independence reported; and (10) any other study findings. During the critical appraisal, it will also be noted on the form if studies are at high risk of bias.

### Critical appraisal

Following the screening, all included studies will be assessed for risk of bias in duplicate. For any observational studies, including case–control and cohort studies, they will be assessed based on the Newcastle-Ottawa Scale (NOS).[36] Cross-sectional studies will be assessed using a modified seven-question version of the NOS that was designed for cross-sectional studies.[37] For both versions, the raters will assign points for each of the quality parameters: selection, comparability and outcome.[36] Studies that have less than 5 points in total are at high risk of biases for both the original and modified versions of the NOS.[37 38] Any studies that are at high risk of bias will be noted in the data extraction form. If any randomized controlled trials are included, the Joanne Briggs Institute checklist for

randomized controlled trials will be used to assess the risk of bias.[39]

### Data synthesis

The review's findings will be reported based on the PRISMA.[28] A descriptive analysis will be used to report the participants' ADL functional independence across the different types of ADLs. A table will be created for the analysis called 'Summary of Study Findings'. The information in the table will include the following study properties: (1) name of author(s); (2) publication year; (3) country; (4) study design; (5) population (BD diagnoses studied and BD phases); (6) average onset and duration of the illness; (7) sample size; (8) assessment(s) used for ADL functioning; (9) outcome measure type(s) used (eg, self-reports, performance-based observations or mixed); (10) reported ADL or functional outcomes per ADL/group of ADLs; and (11) other general findings of the articles.

A second table will then be created and titled 'ADL Profile'. This table will be organised by separate ADL subheadings such as personal care, transportation, managing finances and/or household management, depending on the included studies from the screening process. An ADL subheading will only be included if a minimum of two studies covered that specific ADL or the ADL domain. In addition, if there are sufficient data from the included studies, the level of independence for each ADL or ADL subgroup will be summarised across all phases of BD, as well as the different phases of BD: euthymic, depressed and manic/hypomanic BD.

A descriptive analysis will also be developed in a narrative format to compare findings from each study. The descriptive analysis would involve categorising the different ADLs studied in primary literature. This descriptive analysis will be qualitatively grouped by similar ADLs, including self-care, productivity and leisure. General findings will be described across the studies identified, and inferences will be drawn based on where ADL functioning is most impacted. In doing so, this information can help individuals and families better understand areas where the most support may be needed.

A meta-analysis will also be included if there is sufficient statistical information from the included studies. If common assessments were used across multiple studies, or if there were common statistical measures used across studies such as relative risks or ORs, a meta-analysis will be conducted with this information. A random effects approach will be employed where effect sizes and variance will be calculated. A weighted mean of these effect sizes will then be generated. As there will be clinical and methodological differences between the studies, heterogeneity between studies will be tabulated with the $I^2$ statistic. The $I^2$ statistic will be calculated as per the Cochrane Handbook for Systematic Reviews.[40] Statistical analyses will be conducted using R V.4.02 and the 'metafor' V.2.4-0 package.[41–43]

### Patient and public involvement

There was no patient or public involvement in this study.

## DISCUSSION

This protocol demonstrates a method for developing a systematic review examining current literature on how individuals manage their occupational functioning in terms of their ADLs with BD. This protocol also presents a system for how it will screen for relevant articles, describe the trends found among the articles and a means of assessing the quality of each included study. It also considers the different phases of BD such as euthymia, manic/hypomanic episodes and depressive episodes, which may also play a crucial role in impacting ADL functioning.

In creating this review, a resource will be developed to integrate current primary literature. The resource will compile various ADLs, such as household tasks, personal care and work, and will report the functioning across different ADLs and ADL subgroups encountered from each of the included studies. Conducting this review will also identify gaps in occupation-based mental health literature and potentially evaluate current and the need for new ADL-based assessments for mental health disorders. Following the completion of the review, future avenues for research include developing best practice guidelines for targeting ADLs for patients with BD, as well as creating targeted interventions to improve independence and functioning in specific ADLs.

## ETHICS AND DISSEMINATION

As this systematic review uses information from available primary literature, this review does not require ethics approval. This review's results will help identify the trends in ADLs that individuals with BD struggle with and can help healthcare clinicians develop targeted interventions for particular ADLs. We plan to disseminate the results in a peer-reviewed journal and conferences that target occupational therapists and mental health workers.

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**Contributors** BN-K, AMA and FS planned the study protocol. AMA drafted the manuscript for this review protocol. BN-K and FS edited the initial protocol manuscript drafts. BN-K, AMA, FS, JS and HC all contributed to revising, reviewing and approving the manuscript. BN-K prepared the final manuscript for submission and submitted the manuscript for review.

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