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Final Report for the Workers Compensation Board of Manitoba

Predictors of Prolonged Recovery Following Acceptance for Disability Benefits: A Systematic Review and Meta-Analysis of Observational Studies

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Executive Summary

- We conducted a systematic review of all studies that have explored predictors of recovery following receipt of disability or sickness benefits.

- We conducted a comprehensive literature search that identified 19,394 unique citations, of which we reviewed 1,098 in full text, and identified 250 studies (enrolling 7,307,657 patients receiving disability benefits) that were eligible for our review.

- Patients were enrolled from 20 different countries, but most studies were conducted in the USA (n=69) or Canada (n=48).

- Predictive factors were acquired from administrative databases (n=136), through primary data collection (n=42), or a combination of administrative data and primary collection (n=72).

- 45% of enrolled patients were women, the median age of participants was 41 (interquartile range [IQR]: 37 to 44), and the median duration of follow-up was 12 months (IQR: 12 to 24).

- Most studies enrolled patients with musculoskeletal injuries (n=164), or mental illness (n=23), with 58 studies enrolling mixed conditions.

- Most studies looked at patients receiving Workers' Compensation benefits (n=125).

- We identified more than 300 predictors of recovery that had been studied, of which 54 were amenable to statistical pooling. Of these, 10 factors showed credible, large associations with recovery.

- Assuming that approximately 15% of claimants fail to recovery at 1-year, the following factors showed a large and credible INCREASED risk of failure to recovery:

  - Ongoing litigation: absolute risk increase [ARI] 13%, which means that 28% of claimants with ongoing litigation fail to recovery at 1-year
  - Prescription opioid use: ARI 9%
  - Fear avoidance beliefs: ARI 8%
  - Lack of supportive workplace policies: ARI 7%
  - Low expectations for return to work: ARI 9%
  - Substance use disorder: ARI 6%
  - Lack of workplace accommodation for return to work: ARI 6%
  - Depression: ARI 5%
  - Lack of work supervisor support: ARI 5%
  - Higher pain catastrophizing: ARI 5%

- We found 27 predictors that were associated with credible, but smaller associations with failure to recover: (1) language barrier, (2) job insecurity, (3) lack of co-worker support, (4) unemployed before disability benefits, (5) lack of healthcare provider

support for return to work, (6) low perceived workplace safety, (7) higher rate of employment in their jurisdiction, (8) self-employed, (9) job type [higher risk for blue collar], (10) type of industry [higher risk for primary industry], (11) larger company size, (12) higher physical job demands, (13) higher psychological job demands, (14) part-time workers, (15) non-union member, (16) private employer, (17) longer duration of employment before benefits, (18) unskilled workers, (19) longer time to claim filing, (20) longer time to claim approval, (21) older age, (22) lower formal education, (23) greater alcohol use, (24) female sex, (24) lower social functioning at baseline, (25) cohabitation, (26) having children, and (27) being overweight.

- Although the associations for these 27 factors were smaller, they are independent, and so a combination can still result in a large risk for failure to recover (e.g., language barrier + lack of healthcare provider support + older age + lower education).

- Our review found several important factors that are associated with claim recovery; however, only a minority were medical factors (i.e., opioid use, addiction, depression) and most were either work-related or psychological factors.

- These findings suggest that a claimant's potential for prolonged recovery could be assessed at baseline to allocate resources according to risk status to optimize prognosis, and that attention to non-medical factors may be critical to promote timely recovery of many high-risk claimants.

Introduction

In 2012, according to the Canadian Survey on Disability, approximately 3.8 million Canadians (13.7% of the total population) reported a disability[1]. Canadian workers who experience a work-related injury or illness may qualify for wage-replacement benefits through their provincial Workers' Compensation Board. Most individuals who are accepted for wage replacement benefits recover in a timely manner and return to work; however, approximately 10% do not. These 10% account for 65% to 75% of resources spent on disability claims[2, 3]. Currently, there are no standardized approaches in place to screen incoming claims for risks associated with prolonged recovery. This systems gap complicates effective triaging, assignment of resources, and development and study of strategies for reducing disability duration.

There has not been a systematic review of factors associated with disability duration across all conditions. Previous systematic reviews of factors associated with claim duration or claim resolution for isolated conditions (e.g. low back pain,[4] work-related traumatic hand injury[5]) have several limitations, including outdated searches, inadequate risk of bias assessment, lack of statistical pooling of measures of association, and failure to adequately evaluate the quality of evidence. We therefore conducted a systematic review and meta-analysis to establish predictors of prolonged recovery following receipt of disability benefits, across all clinical conditions, which addresses limitations of prior reviews.

Review of Work Completed

We identified eligible studies by a systematic search of CINAHL, EMBASE, MEDLINE, and PsychINFO. We included cohort or case-control studies that used an adjusted analysis to explore predictors of claim duration, prolonged recovery, or claim resolution after workers have been accepted for wage replacement benefits. Pairs of reviewers screened titles and abstracts of identified citations, reviewed the full texts of potentially eligible reports and extracted information from eligible studies. We followed criteria from the Users' Guides to the Medical Literature to assess the risk of bias among eligible studies[6].

We pooled measures of association for predictors that were reported by 2 or more studies, using random-effects models. We presented the pooled magnitude of association as both an odds ratio (OR) and absolute risk difference (ARD), along with associated measures of precision (95% confidence intervals [95%CIs]).

To avoid overestimating the strength of association, we used an OR of "1" for predictors that were tested in bivariable analyses but excluded from adjusted analyses because of non-significance or that were included in multivariable analyses with the only information that they were not significant. We worked with clinical experts, including representatives from the Workers Compensation Board (WCB) of Manitoba, to set thresholds regarding the increase in absolute risk would be sufficient to prompt action for addressing both modifiable and non-modifiable risk factors to further optimize interpretability of our results.

We evaluated heterogeneity of pooled estimates through visual inspection of forest plots and used a priori hypotheses to explain variability among studies. We used the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach to summarize the quality of evidence for all meta-analyses as high, moderate, low, or very low[7].

Results

Demographics
Our literature search identified 19,394 unique citations, of which we reviewed 1,098 in full text, and identified 250 studies (enrolling 7,307,657 patients receiving disability benefits) that were eligible for our review.

Patients were enrolled from 20 different countries, but most studies were conducted in the USA (n=69) or Canada (n=48). Predictive factors were acquired from administrative databases (n=136), through primary data collection (n=42), or a combination of administrative data and primary collection (n=72). Forty-five percent of enrolled patients were women, the median age of participants was 41 (interquartile range [IQR]: 37 to 44), and the median duration of follow-up was 12 months (IQR: 12 to 24).

Most studies enrolled patients with musculoskeletal injuries (n=164), or mental illness (n=23), with 58 studies enrolling mixed conditions. Most studies looked at patients receiving Workers' Compensation benefits (n=125).

Predictors of Recovery
We identified more than 300 predictors of recovery that had been studied, of which 54 were amenable to statistical pooling. Of these, 10 factors showed credible, large associations with recovery.

Assuming that approximately 15% of claimants fail to recovery at 1-year, the following factors showed a large and credible INCREASED risk of failure to recovery:

1. Ongoing litigation: absolute risk increase [ARI] 13%, which means that 28% of claimants with ongoing litigation fail to recovery at 1-year
2. Prescription opioid use: ARI 9%
3. Fear avoidance beliefs: ARI 8%
4. Lack of supportive workplace policies: ARI 7%
5. Low expectations for return to work: ARI 9%
6. Substance use disorder: ARI 6%
7. Lack of workplace accommodation for return to work: ARI 6%
8. Depression: ARI 5%
9. Lack of work supervisor support: ARI 5%
10. Higher pain catastrophizing: ARI 5%

We found 27 predictors that were associated with credible, but smaller associations with failure to recover:

(1) language barrier, RD 7%
(2) job insecurity, RD 7%
(3) lack of co-worker support, RD 4%
(4) unemployed before disability benefits, RD 4%
(5) lack of healthcare provider support for return to work, RD 3%
(6) low perceived workplace safety, RD 2%
(7) higher rate of employment in their jurisdiction, RD 1.6%
(8) self-employed, RD 1.3%
(9) job type [higher risk for blue collar], RD 3%
(10) type of industry [higher risk for primary industry], RD 2.5%
(11) larger company size, RD 2%
(12) higher physical job demands, RD 1.5%
(13) higher psychological job demands, RD 1.1%
(14) part-time workers, RD 1.4%
(15) non-union member, RD 1.4%
(16) private employer, RD 0.5%
(17) longer duration of employment before benefits, RD 0.8% for each month
(18) unskilled workers, RD 0.8%
(19) longer time to claim filing, RD 1.3% for every week
(20) longer time to claim approval, RD 0.9% for every week
(21) older age, RD 2% for every 10-year increment from age 15
(22) lower formal education, RD 1.3% for high school or less
(23) greater alcohol use, RD 1.3%
(24) female sex, RD 0.8%
(24) lower social functioning at baseline, RD 0.8% for every 10-point decrement on the SF-36 social functioning subscale
(25) cohabitation, RD 1.7%
(26) having children, RD 0.4%
(27) being overweight, RD 1.1%

Proposed Recommendations

- Our review found several important factors that are associated with claim recovery; however, only a minority were medical factors (i.e., opioid use, addiction, depression) and most were either work-related or psychological factors.

- We also found smaller associations for 27 factors; however, they are independent and so a combination can still result in a large risk for failure to recover (e.g., language barrier + lack of healthcare provider support + older age + lower education).

- These findings suggest that a claimant's potential for prolonged recovery could be assessed at baseline in order to allocate resources according to risk status to optimize prognosis, and that attention to non-medical factors may be critical to promote timely recovery of many high-risk claimants.

- Next steps:

    o We are currently updating our literature searches to capture any new studies published in the last year and will re-run all analyses.
    o Once updated, we will write up our study for publication, and will share a draft with the WCB of Manitoba for review and non-binding feedback before submission.

- Future Studies:
    o Our findings could support the development of a new tool to identify high-risk claimants.
    o Such a tool would then require validation in a cohort of disability claimants.
    o Once developed, a validated prediction tool could be tested in an interventional study to explore the impact on claim resolution, and time to return to work.

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