Measuring and Quantifying Lost Productivity Due to Priority Diseases: A Review of the Past 10 Years and Reflections on the Unprecedented Changes and Implications Emerging with COVID-19

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BACKGROUND

- Unprecedented workplace changes emerging with COVID-19 necessitate the critical review of employee well-being and productivity.
- Limited research has systematically synthesized productivity loss evidence.

OBJECTIVE

- To summarize published literature for productivity loss associated with priority diseases among US workers.

METHODS

- The systematic literature review included studies:
  - Published from 2011 to 2021.
  - Employed US adults aged 19-64 years with cancer, chronic lung disease, depression, pain, or cardiometabolic disease.
- Methods for evaluating productivity loss, data sources used, and time/monetary estimates of productivity loss were extracted.
- Priority time estimates for employers were incremental work hours lost, followed by % overall work impairment from the Work Productivity and Impairment (WPAI) questionnaire.

RESULTS

- 183 studies evaluated productivity loss outcomes (97.3%) and/or costs (42.6%) (**Figure 1**).
- Pain was most studied (24%), followed by cancer (22%), lung disease (17%), cardiometabolic disease (16%), and depression (16%).
- Two-thirds (66%) were secondary data analyses, 20% collected non-controlled primary data, 9% were modeling evaluations, and 5% collected controlled primary data.
- The most common data sources were prospective studies (20%), unique patient surveys (16%), the Medical Expenditure Panel Survey (13%), randomized controlled trials (10%), MarketScan® database studies (10%), and the National Health and Wellness Survey (9%).
- Most studies found patients lost up to 80 incremental annual work hours (**Figure 2**).
- The overall work impairment ranged from 10% to 70% (**Figure 3**).
- Annual incremental costs of lost work productivity ranged from $100 to $10,000 (**Figure 4**).

Figure 1. PRISMA flow diagram showing study selection

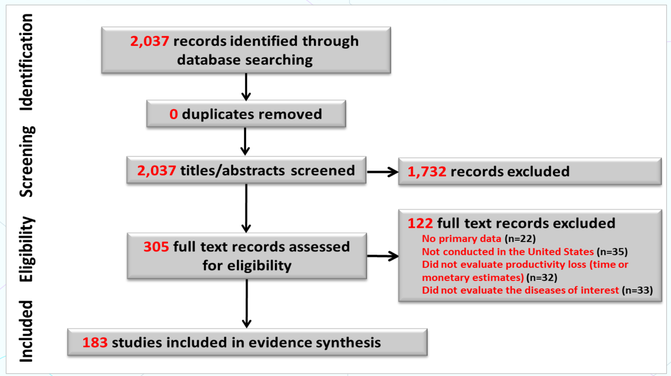


Figure 2. Annual incremental work hours lost per patient by disease

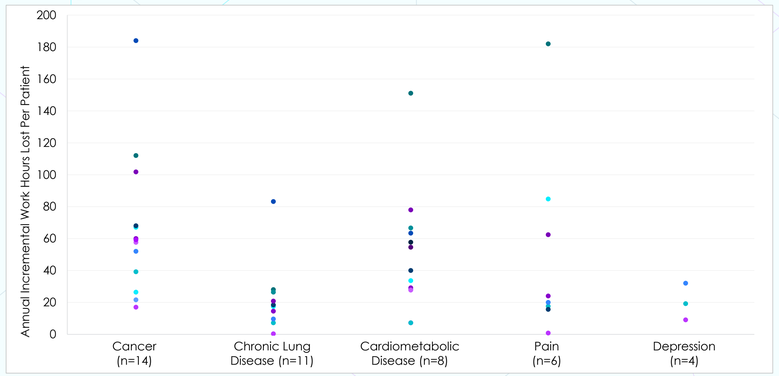


Figure 3. Overall work impairment questionnaire from WPAI by disease

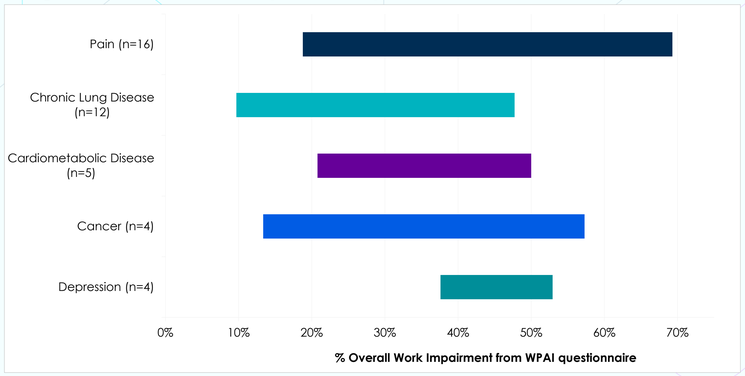
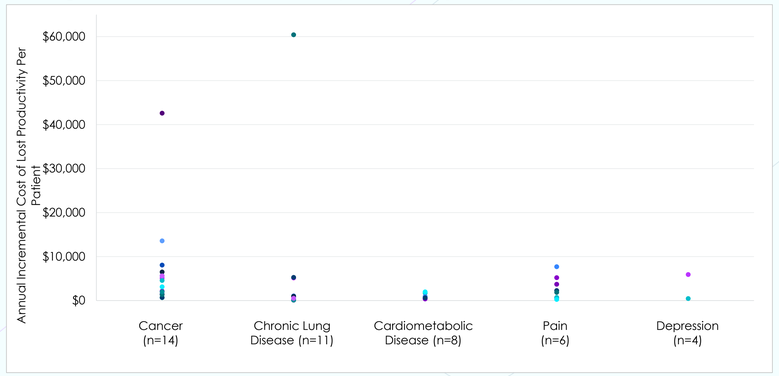


Figure 4. Annual incremental productivity cost per patient by disease



CONCLUSIONS

- Study findings illustrated the substantial burden of lost productivity.
- Traditional methods and data sources for capturing productivity loss are less applicable given the dramatic workplace changes.
- Efforts to re-conceptualize productivity and to modify research strategies accordingly should be considered given the transformed work environments, job expectations, and health and behavior of employees.
- Worker's health, productivity, and retention are becoming increasingly important in the COVID-19 era.
- This study provided evidence that may encourage employers to re-think how to meaningfully measure and optimally enhance employee productivity.

LIMITATIONS

- Heterogeneity of the patients, study designs, and definitions.

DISCLOSURES

This study was funded by Boston Scientific. Drs. Rojanasarot and Bhattacharyya are full-time employees of Boston Scientific. Ms. Natalie Edwards is an employee of Health Services Consulting Corporation.