Please accept for review the invited paper ID (03527550) titled “A survey of population-based morbidity studies and a novel example of affective disorder multi-hyper-morbidity across the life-span: A 16 year population study.”

The paper presents a scoping review of publications with focus on the biomedical and biophysical morbidities associated with psychiatric disorder and a novel example from a population of the relationship between affective disorder and the frequency of associated biomedical and biophysical morbidities across the lifespan.

This paper was recently presented at the WPA Bangkok comorbidity section’s state of the art symposium. The section leader, Norman Sartorius, has described understanding biomedical and biophysical morbidity as psychiatry’s 21st century challenge.

The present paper advances this agenda as part of a series of papers that have helped to give form and focus to the comorbidity section‘s theme by examining the association of biomedical and biophysical morbidity in a large population over time. The paper presents another refinement in the series of papers published to date in terms of the standardized algorithms necessary to assess compare and interpret the results:

Cawthorpe, D. A novel population-based health index for mental disorder. *Perm. J.* **17**, (2013).

Wilkes, T. C., Guyn, L., Li, B., Lu, M. & Cawthorpe, D. Association of child and adolescent psychiatric disorders with somatic or biomedical diagnoses: do population-based utilization study results support the adverse childhood experiences study? *Perm. J.* **16**, (2012).

Cawthorpe, D. & Davidson, M. Temporal comorbidity of mental disorder and ulcerative colitis. *Perm. J.* **19**, (2015).

Cawthorpe, D. A 16-Year Cohort Analysis of Autism Spectrum Disorder-Associated Morbidity in a Pediatric Population. *Front. psychiatry* **9**, 635 (2018).

Cawthorpe, D. *et al.* Temporal order of cancers and mental disorders in an adult population. *BJPsych open* **4**, 95–105 (2018).

Chai, P. H., Chang, S. & Cawthorpe, D. The Temporal Hyper-Morbidity of Asthma and Attention Deficit Disorder: Implications for Interpretation Based on Comparison of Prospective and Cross-Sectional Population Samples. *Psychiatry Investig.* **18**, 166–171 (2021).

As such, these refinements bring the ‘art of diagnosis’ closer to the parallel progression of big data advancements that have given rise to the integration of genomics, metabolomics, proteomic, etc.

Further, the original dataset was developed around 2010 in order to test one a priori hypothesis based on Vince Felitti’s Adverse Childhood Experience (ACE) studies, which showed a dose dependent relationship between early adversity and adult health status. Under the assumption that early adversity is one gateway to adult mental disorder, we hypothesized that the relationship extant the ACE study results would also be apparent in our regional diagnostic information. This proved to be the case with about 54% of the population (.75 Million) having over 16 years about 3 times the level of biomedical and biophysical disorders given the

presence of any mental disorder compared to those without any mental disorder (Cawthorpe 2013).

The scoping survey of the literature provides a signpost of the current field state, while the algorithm advances incrementally the original broad stroke understanding in more precise detail, even though the final roadmap algorithm is yet to be developed.

Thank you in advance for your consideration.

Best regards,

David Cawthorpe, PhD
Professor (Adjunct),
Cumming School of Medicine
Departments of Psychiatry & Community Health Sciences
Institute for Child & Maternal Health
Alberta Children's Hospital Research Institute
The University of Calgary
email: cawthord@ucalgary.ca
https://research4kids.ucalgary.ca/profiles/david-cawthorpe
https://www.wpanet.org/comorbidity