Charlson Comorbidity Index

**Adoption vs Variances**

The Charlson Comorbidity Index (CCI) has been adopted and has gone through changes since its initial inception. According to Quan et al. (2011), utilizing the ICD-10 coding can aid in properly discriminating comorbidities, however not every disease is properly coded to perform an accurate comorbidity assessment. This is evident in countries without universal healthcare systems. Adaption of the CCI in Sweden involved defining differences in the diagnosis progression as well as ensuring the proper coding to effectively correlate with CCI diagnosis terminology (Ludvigsson et al., 2021). Whereas the CCI and the database diagnosis were both modified to adapt to population of patients in Asia better reconciling their diagnoses to predict mortality rates (Choi et al., 2020).

**Other Similar Indexes**

Other comorbidity indexes include the Elixhauser Comorbidity Index. The Elixhauser is a software database that co-references ICD diagnostic codes with comorbidity related mortality risks (Department of Health and Human Services, 2021). The Elixhauser is epidemiologically more specific in its approach to its correlation to mortality with disease diagnoses. The Deyo index is concerned more with the 30 day mortality risk of patients as opposed to the 10 year measurements of the CCI (Schneeweiss & Maclure, 2000). The newest approach to comorbidity assessment for morality risk is multimorbidity. Multimorbidity is more than just the sum of all the person’s comorbidities. Multimorbidity includes the individuals comorbidities along with their severity, the individual’s health characteristics which comprises their total state of health(Stirland et al., 2020)**.** The various indexes differ in their approach to what they measure based on medical coding as well as the time over which mortality risks can be measured. These major differences are also effected by the measurements in differing populations.

References

Choi, J., Kim, M.-H., Kim, Y., Lim, Y.-H., Bae, H., Kim, D., Park, J., Noh, J., & Lee, J. (2020). Recalibration and validation of the Charlson Comorbidity Index in an Asian population: The national health insurance service-national sample cohort study. Scientific Reports, 10(1). <https://doi.org/10.1038/s41598-020-70624-8>

Department of Health and Human Services. (2021, October 29). Elixhauser comorbidity software refined for ICD-10-CM. Agency for Healthcare Research Quality. Retrieved June 3, 2022, from <https://www.hcup-us.ahrq.gov/toolssoftware/comorbidityicd10/comorbidity_icd10.jsp>

Ludvigsson, J. F., Appelros, P., Askling, J., Byberg, L., Carrero, J.-J., Ekström, A., Ekström, M., Smedby, K., Hagström, H., James, S., Järvholm, B., Michaelsson, K., Pedersen, N. L., Sundelin, H., Sundquist, K., & Sundström, J. (2021). Adaptation of the Charlson Comorbidity Index for register-based research in Sweden. Clinical Epidemiology, Volume 13, 21–41. <https://doi.org/10.2147/clep.s282475>

Quan, H., Li, B., Couris, C. M., Fushimi, K., Graham, P., Hider, P., Januel, J., & Sundararajan, V. (2011). Updating and validating the charlson comorbidity index and score for risk adjustment in hospital discharge abstracts using data from 6 countries. American Journal of Epidemiology, 173(6), 676–682. <https://doi.org/10.1093/aje/kwq433>

Schneeweiss, S., & Maclure, M. (2000). Use of comorbidity scores for control of confounding in studies using administrative databases. International Journal of Epidemiology, 29(5), 891–898. <https://doi.org/10.1093/ije/29.5.891>

Stirland, L. E., González-Saavedra, L., Mullin, D. S., Ritchie, C. W., Muniz-Terrera, G., & Russ, T. C. (2020). Measuring multimorbidity beyond counting diseases: Systematic review of community and population studies and guide to index choice. BMJ, m160. <https://doi.org/10.1136/bmj.m160>