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Multimorbidity in the light of biography – results from the Norwegian HUNT 2 and 3 Studies

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Background and Aim: Multimorbidity has been termed one of the biggest medical challenges of our century. Research indicates that chronic dysregulation of major adaptive systems caused by accumulated stress, allostatic overload, may represent a common underlying etiological factor. In light of this we looked at difficult circumstances both in childhood and adulthood with regard to development of adult multimorbidity.

Methods: Our data come from the Nord-Trøndelag Health Study, phase 2 (1995-7) and 3 (2006-8). In total 37 071 participants took part in both phases. Multimorbidity was defined as two or more chronic conditions of 21 available from the questionnaires. Assessment of difficult childhood was made from HUNT 3 and odds ratios of multimorbidity generated with logistic regressions. Difficult circumstances in adulthood were analysed for non-multimorbid adults in HUNT 2 looking at fourteen factors indicative of stress. Relative risk of developing multimorbidity ten years later was then estimated with logistic regression.

Results: In total, 44.8% of participants with a very good childhood had multimorbidity compared to 77.1% of those with a very difficult childhood (Odds ratio: 5.08; 95% CI: 3.63–7.11), similar for both genders. The same trend was seen for all but two of the chronic conditions. Development of multimorbidity with regard to stressful or demanding circumstances showed a significant relationship for twelve of the fourteen factors chosen for the evaluation. The prevalence of multimorbidity increased as well with increasing number of stressful factors, from 26.3% to 42.5% for 6+ factors.

Conclusion: Our results indicate a correlation between demanding circumstances in childhood and multimorbidity later on. The correlation becomes stronger with increasingly difficult circumstances. The results could reflect increased allostatic load as a possible underlying mechanism in development of multimorbidity.