



# The Affected Mental and Physical Systems Index (AMPSI): Assessment of functional mental and physical complaints based on claims data

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## Abstract

### Background

Functional and unspecific complaints are responsible for a significant proportion of healthcare costs. The present paper develops a novel morbidity index that captures various functional and unspecific complaints based on claims data. The index is based on the number of affected systems and represents thus the heterogeneity of complaints.

### Methods

We used ambulatory claims data from 2009 to 2016 containing information for statutory insured individuals in Germany. The study population were children and adults aged between 7 and 105 years. The selection of stress-related ICD-10 diagnoses ( $n = 354$ ) was performed by a focus group comprising physicians and psychologists. These diagnoses were split into 20 categories, nine of which deal with physical complaints (the Affected Physical Systems Index, APSI) and 11 with mental complaints (the Affected Mental Systems Index, AMSI). Together they form the Affected Mental and Physical Systems Index (AMPSI). For each category into which at least one diagnosis falls the patient receives one point on the index. The AMPSI thus ranges from 0 to 20. Based on this index, descriptive analyses as well as correlation analyses at the ecological level are undertaken.

### Results

The average of the AMPSI during the observation period was 2.2. All three indices increased almost linearly until the age group of 56–60 years and stagnated thereafter. The AMPSI and the APSI decrease beyond the mid-80s. Men had slightly lower values than women. 21% of the population had an AMPSI value of at least 4, 16% have an APSI of at least 3 and 10% have an AMSI of at least 3. All three indices showed a regionally similar pattern with lower values in Baden-Württemberg und Bavaria and higher values in Rhineland-Palatinate, Hesse and Lower Saxony. The variation coefficient reaches from 7.8% to 10.6%. Dispersion is highest for AMSI. The correlation between the sub-indices APSI and AMSI at an ecological level is strong ( $r = 0.74$ ). The indices correlated with the socio-economic health index and urbanization index ( $r$  ranging from 0.2 to 0.3).

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### Conclusion

The indices capture physical and mental complaints in an innovative way. Since diagnoses are split into categories, the index robustly represents the heterogeneity of the affected systems. Preliminary analysis substantiates the validity of the indices. The indices can be employed for multiple purposes, especially as estimator for physiological stress, as early-warning indicator of more serious diagnoses, as well as estimator for related health costs.

### Keywords

Affected Mental and Physical Systems Index, AMPSI, children and adults, functional disorders, Germany, physiological stress, mental disorders, regional differences, somatization, statutory-insured individuals

### Citation

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