A method for calculating adherence to polypharmacy from dispensing data records

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Background Several measures for calculating adherence to one medication from dispensing data records have been proposed, but the nomenclature is inconsistent and computations vary. The same measures, like the medication possession ratio (MPR), have been used for multiple medication regimens, and have tended to over- or under-estimate adherence rates. Objective To demonstrate the impact of varying elements in MPR to a single medication regimen; to define standards for the estimation of adherence to polypharmacy; to propose a new method for calculating adherence to polypharmacy; to face validate it. Setting Face validity of the proposed method. Method Variations in the MPR formula were simulated. Standards for the estimation of adherence to polypharmacy were defined. A new method to calculate adherence to polypharmacy was established. Its face validity with three illustrative cases obtained from a pharmacy refill database was assessed. Main outcome measure Adherence rate to polypharmacy from refill data records. Results MPR to a single medication is operationalized in the numerator and denominator and is influenced by the parameters like observation period, medication gaps, overlap. For polypharmacy, an average MPR is commonly used, which is not accounting for the specificity of multiple medications, and hence overestimating adherence rate. We propose the daily polypharmacy possession ratio (DPPR) as an index of adherence to polypharmacy. It estimates the proportion of time a patient had medication available for use by considering the presence or absence of multiple medications on each day in the observation period. We calculated possession rates from refill histories over 31ămonths (January 1, 2011-July 31, 2013) for three illustrative patients. The average MPR estimates were 80ă% for a patient with 6 medications/20 refill dates, 90ă% for a patient with 4 medications/11 refill dates, and 89ă% for a patient with 3 medications/17 refill dates. The corresponding DPPRs were 75, 88 and 99ă%, indicating overestimations by 5 and 2ă%, and underestimation by 10ă%, respectively. Conclusion The DPPR accounts for the specificity of polypharmacy including number of medications, medication switching, duplication, overlapping. Research is needed to further confirm the validity of this new index.

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