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Reporting Summary

Nature Portfolio wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Portfolio policies, see our Editorial Policies and the Editorial Policy Checklist.

Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

n/a	Confirmed	
☐	☒	The exact sample size (*n*) for each experimental group/condition, given as a discrete number and unit of measurement
☐	☒	A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
☐	☒	The statistical test(s) used AND whether they are one- or two-sided *Only common tests should be described solely by name; describe more complex techniques in the Methods section.*
☐	☒	A description of all covariates tested
☐	☒	A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons
☐	☒	A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
☐	☒	For null hypothesis testing, the test statistic (e.g. *F*, *t*, *r*) with confidence intervals, effect sizes, degrees of freedom and *P* value noted *Give P values as exact values whenever suitable.*
☒	☐	For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
☒	☐	For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
☒	☐	Estimates of effect sizes (e.g. Cohen's *d*, Pearson's *r*), indicating how they were calculated

Our web collection on statistics for biologists contains articles on many of the points above.

Software and code

Policy information about availability of computer code

Data collection	Microsoft Excel (version 2021)
Data analysis	All statistical analyses were conducted in R (version 4.5.3). Specifically, we employed the following R packages: readxl for data import; tidyverse (including dplyr, tidyr, ggplot2) for data manipulation; geepack for GEE modeling; missMDA for multiple imputation with PCA; boot for bootstrapping; and effsize, car, e1071, and rstatix for effect size calculations and statistical diagnostics.

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Portfolio guidelines for submitting code & software for further information.

Data

Policy information about availability of data

All manuscripts must include a data availability statement. This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A description of any restrictions on data availability
- For clinical datasets or third party data, please ensure that the statement adheres to our policy

The authors declare that all data supporting the findings of this study are available within the paper and its supplementary information files.

Research involving human participants, their data, or biological material

Policy information about studies with human participants or human data. See also policy information about sex, gender (identity/presentation), and sexual orientation and race, ethnicity and racism.

Reporting on sex and gender	Not applicable.
Reporting on race, ethnicity, or other socially relevant groupings	Not applicable.
Population characteristics	Not applicable.
Recruitment	Not applicable.
Ethics oversight	Not applicable.

Note that full information on the approval of the study protocol must also be provided in the manuscript.

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☐ Life sciences ☒ Behavioural & social sciences ☐ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see nature.com/documents/nr-reporting-summary-flat.pdf

Behavioural & social sciences study design

All studies must disclose on these points even when the disclosure is negative.

Study description	A longitudinal ecological design was employed to analyze the status of CPGs and their associations with disease burden from 1995 to 2023. A time-series panel dataset with country as unit was constructed, incorporating variables such as the annual number of CPGs, the annual proportion of CPGs with AGREE II domain scores above 70%, and the disease burden indicators. The study consisted of two main components: (1) a longitudinal descriptive analysis to show the development of CPGs' quantity and quality; (2) an ecological association analysis to evaluate the relationship between CPGs and disease burden, while adjusting for covariates. All data were obtained from publicly available international databases. Therefore, ethical approval was not required for this study.
Research sample	CPGs were searched from Medline via PubMed, Embase via OVID, and Guidelines International Network (GIN) Library. Medline via PubMed and Embase via OVID were chosen for their comprehensive coverage of biomedical literature, encompassing published guidelines and related evaluations. GIN Library was selected as it is a specialized repository dedicated to the collection of CPGs from diverse countries and regions worldwide. The articles that evaluating CPGs by the Appraisal of Guidelines for Research & Evaluation II (AGREE II) instrument were searched from PubMed.
Sampling strategy	Not applicable.
Data collection	Two researchers independently extracted information from the included CPGs, with the process cross-checked. During the process, any doubt or divergence would be resolved through negotiation with the corresponding author. The general information was extracted directly from each CPG, including year of publication, continent, country, disease, theme (prevention, diagnosis, treatment, nursing, and rehabilitation), update status, and targeted population. Disease, theme, and target population of CPGs were determined by screening the title and abstract. The country for CPGs was determined based on the institutional affiliation of the authors. AGREE II standardized scores across six domains, as well as the country of guideline development for the evaluated CPGs, were obtained from published studies assessing CPG quality. Based on the CPG dataset, the analytic samples were restricted to countries with at least one year data on either CPG's quantity or CPG's quality. For those countries, national-level disease burden metrics, including age-standardized all-cause DALYs rates and age-standardized all-cause death rates, were directly extracted from the GBD database. National-level socioeconomic covariates, including population density, urban population proportion, GDP per capita, and the Human Development Index, were sourced directly from the Our World in Data platform.
Timing	The time scope of the search was from 1 January 1995 to 31 December 2023.
Data exclusions	The inclusion criteria included both guidelines that strictly meet the IOM standards and the clinical guidelines that have clear recommendations for disease prevention, diagnosis, treatment, and medication despite the lack of systematic reviews, to ensure the comprehensiveness of the inclusion guidelines in the real world. We excluded non-English guidelines because non-English guidelines from around the world lack operability both in accessibility and language understanding. Additionally, it does also not have repeatability and scientificity for other searchers. Studies that evaluated the quality of CPGs using the AGREE II were included if they fully complied with the scoring requirements outlined in the AGREE II User's Manual. Studies were excluded if they met any of the following criteria: (i) unable to obtain full text; (ii) the publication was not in English; (iii) the publication did not provide standardized scores for AGREE II six domains.

Non-participation	Not applicable.
Randomization	Not applicable.

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems

n/a	Involved in the study
☒	☐ Antibodies
☒	☐ Eukaryotic cell lines
☒	☐ Palaeontology and archaeology
☒	☐ Animals and other organisms
☒	☐ Clinical data
☒	☐ Dual use research of concern
☒	☐ Plants

Methods

n/a	Involved in the study
☒	☐ ChIP-seq
☒	☐ Flow cytometry
☒	☐ MRI-based neuroimaging

Plants

Seed stocks	Not applicable.
Novel plant genotypes	Not applicable.
Authentication	Not applicable.