

Checklist for study design and statistical analysis in Chinese medical Journals

Table1 Errors/defects in study design of observational research

Study Design	Applied	Misused	Types of error
Case Study or Case Series Study	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Cross-Sectional Study	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	1 <input type="checkbox"/> No sampling when needed 2 <input type="checkbox"/> Inappropriate sampling method or procedure 3 <input type="checkbox"/> No details of sampling procedure 4 <input type="checkbox"/> No sample size estimating step 5 <input type="checkbox"/> No analysis for non-response samples Others, please specify:
Cohort Study	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	1 <input type="checkbox"/> No sampling when needed 2 <input type="checkbox"/> Inappropriate sampling method or procedure 3 <input type="checkbox"/> No details of sampling procedure 4 <input type="checkbox"/> No sample size estimating step 5 <input type="checkbox"/> No inclusion and exclusion criteria 6 <input type="checkbox"/> Inappropriate non-exposed group 7 <input type="checkbox"/> No analysis for withdrawals Others, please specify:
Case-Control Study	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	1 <input type="checkbox"/> No sampling when needed 2 <input type="checkbox"/> Inappropriate sampling method or procedure 3 <input type="checkbox"/> No details of sampling procedure 4 <input type="checkbox"/> No sample size estimating step 5 <input type="checkbox"/> No inclusion and exclusion criteria 6 <input type="checkbox"/> Inappropriate control group Others, please specify:
Diagnostic Test	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	1 <input type="checkbox"/> No sample size estimating step 2 <input type="checkbox"/> No control group or inappropriate control group Others, please specify:

Table 2 Errors/defects in study design of intervention research

Study design	Applied	Misused	Types of error
RCT	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	1 <input type="checkbox"/> Unclear study aim and hypothesis 2 <input type="checkbox"/> Unclear primary outcome measures 3 <input type="checkbox"/> No sample size estimating step 4 <input type="checkbox"/> No inclusion and exclusion criteria 5 <input type="checkbox"/> No statement of intervention for each group or unclear 6 <input type="checkbox"/> Failure to use or report randomization 7 <input type="checkbox"/> No report of blindness when needed 8 <input type="checkbox"/> No analysis for withdrawals Others, please specify:
Does RCT register on clinical trial registration platform? 0 <input type="checkbox"/> NO, 1 <input type="checkbox"/> YES			
Non-RCT	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	1 <input type="checkbox"/> Unclear study aim and hypothesis 2 <input type="checkbox"/> Unclear primary outcome measures 3 <input type="checkbox"/> No inclusion and exclusion criteria 4 <input type="checkbox"/> No sample size estimating step when needed 5 <input type="checkbox"/> Failure to use or report randomization if possible 6 <input type="checkbox"/> Failure to use or report blinding if possible 7 <input type="checkbox"/> No statement of intervention for each group or unclear 8 <input type="checkbox"/> No analysis for withdrawals Others, please specify:
Basic science study*	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	1 <input type="checkbox"/> No sample size estimating step 2 <input type="checkbox"/> Failure to report the test power 3 <input type="checkbox"/> No statement of intervention for each group or unclear 4 <input type="checkbox"/> Failure to use or report randomization 5 <input type="checkbox"/> No control group 6 <input type="checkbox"/> Use of inappropriate control group Others, please specify:

*Basic science study includes preclinical animal and laboratory in vivo and in vitro study.

Does the research need statistical analysis? 0 NO 1 YES, if “YES”, fail to use? 0 NO 1 YES

Table 3 Statistical content and errors/defects in original articles

Statistical methods	Applied	Misused	Type of errors
Statistical description	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
t-test	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	1 <input type="checkbox"/> Using multiple t-test for multiple group comparison 2 <input type="checkbox"/> Using paired t-test for unpaired data or vice versa 3 <input type="checkbox"/> Using t-test under nonparametric setting 4 <input type="checkbox"/> Using t-test without considering the baseline Others, please specify:
Contingency tables	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	1 <input type="checkbox"/> No continuity correction or Fisher exact test if needed 2 <input type="checkbox"/> No significant level adjustment for multiple comparison 3 <input type="checkbox"/> Misusing Chi-square test for paired fourfold table 4 <input type="checkbox"/> Using Chi-square test for ranked data 5 <input type="checkbox"/> Ignorance of stratification factors 6 <input type="checkbox"/> Using p value of Chi-square test to describe the correlation of two variables instead of contingency coefficient Others, please specify:
Rank transformation nonparametric test	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	1 <input type="checkbox"/> Using multiple pair-wise comparison for multiple group comparison 2 <input type="checkbox"/> Using wrong type of rank sum test for different study types Others, please specify:
ANOVA	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	1 <input type="checkbox"/> Using completely random ANOVA to analyze multi-factor ANOVA 2 <input type="checkbox"/> Ignoring the setting of ANOVA for completely random design data 3 <input type="checkbox"/> No multiple pair-wise comparison of ANOVA when needed 4 <input type="checkbox"/> Misusing the method of multiple pair-wise comparison of ANOVA 5 <input type="checkbox"/> Using ANOVA to analyze repeated-measures data Others, please specify:
Repeated-measures analysis	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Analysis of covariance	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Pearson's correlation	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	

Simple linear regression	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Nonlinear regression	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Nonparametric correlation	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Multiple linear regression	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Logistic regression	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Survival analysis	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Clustering analysis	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Discriminant analysis	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Principle component analysis and factor analysis	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Canonical correlation analysis	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Meta analysis	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
ROC	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Reliability and validity analysis	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Others, please specify:			

Table 4 Inappropriate presentation a/o interpretation of results

Result presentation and interpretation	YES/NO
Types of inappropriate result presentation	
Unspecified statistical methods	<input type="checkbox"/> YES <input type="checkbox"/> NO
Insufficient or inappropriate description of methods	<input type="checkbox"/> YES <input type="checkbox"/> NO
Reporting p value without test statistics	<input type="checkbox"/> YES <input type="checkbox"/> NO
p values without confidence intervals	<input type="checkbox"/> YES <input type="checkbox"/> NO
Using mean \pm SD to describe non-normal data	<input type="checkbox"/> YES <input type="checkbox"/> NO
Using proportion instead of rate	<input type="checkbox"/> YES <input type="checkbox"/> NO
Using arbitrary p thresholds (like $p<0.01$) instead of reporting exact p values	<input type="checkbox"/> YES <input type="checkbox"/> NO
Incorrect use of table	<input type="checkbox"/> YES <input type="checkbox"/> NO
Incorrect use of chart and figure	<input type="checkbox"/> YES <input type="checkbox"/> NO
Ignoring baselines of two groups	<input type="checkbox"/> YES <input type="checkbox"/> NO
Others, please specify:	
Types of inappropriate result interpretation	
$p < \alpha$, the smaller the P value, the greater the difference between groups	<input type="checkbox"/> YES <input type="checkbox"/> NO
$p > \alpha$, reporting no difference between groups	<input type="checkbox"/> YES <input type="checkbox"/> NO
$p > \alpha$, reporting difference between groups	<input type="checkbox"/> YES <input type="checkbox"/> NO
Others, please specify:	