Evidence based orthodontics

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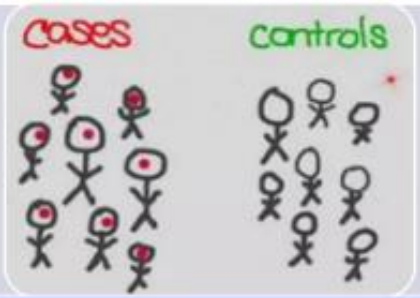
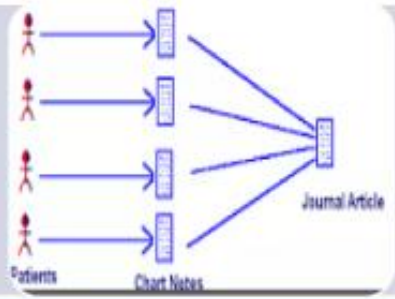
Best evidence is a term that refers to information obtained from randomized controlled clinical trials, non-randomized controlled clinical trials, cohort studies, case-control studies, crossover studies, cross-sectional studies, case studies or, in the absence of scientific evidence, the consensus opinion of experts in the appropriate fields of research or clinical practice.

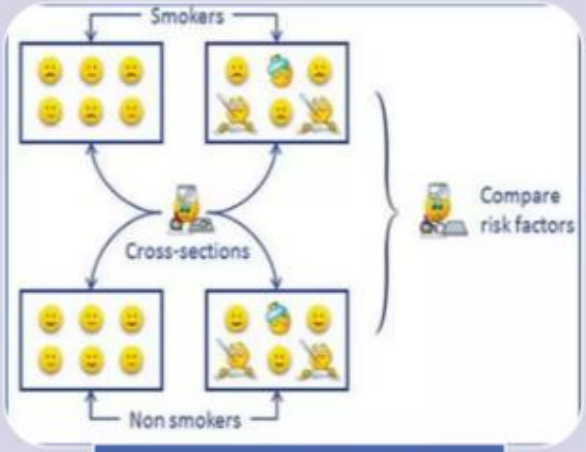


Case-control study involves identifying subjects with a clinical condition (cases) and subjects free from the condition (controls), and investigating if the two groups have similar or different exposures to risk indicator(s) or factor(s) associated with the disease.



Case-series is a report on a series of patients with an outcome of interest. No control group is involved.

Controlled clinical trial is a study that uses the same design features of a randomized controlled clinical trial, but, for reasons beyond the control of the investigators, the subjects are assigned using a non-random process into control or experimental groups.



Cross-sectional study is the observation of a defined population at a single point in time or in a specified time interval. Exposure and outcome are determined simultaneously.

Meta-analysis is a review that uses quantitative methods to combine the statistical measures from two or more studies and generates a weighted average of the effect of an intervention, degree of association between a risk factor and a disease, or accuracy of a diagnostic test.

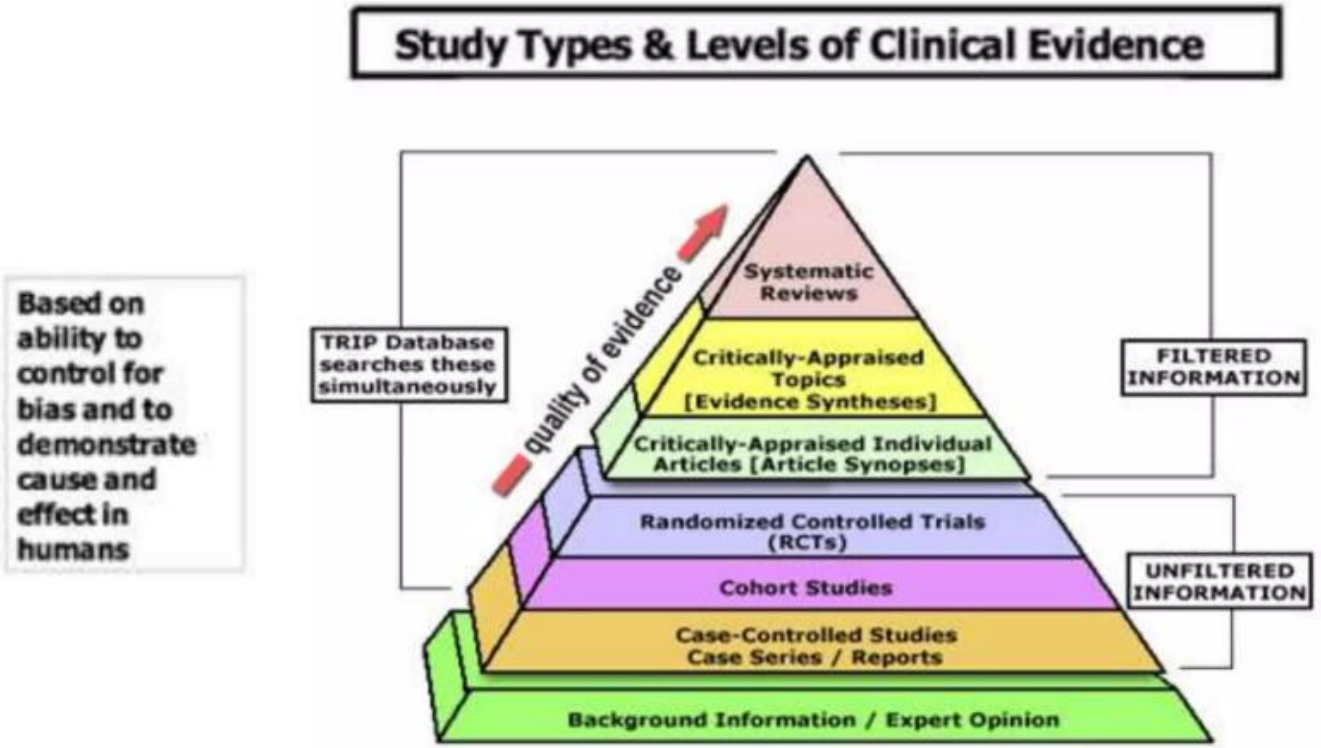
Evidence based orthodontic practice is all about -

- Doing the right thing
- to the right patient
- in the right way
- at the right time
- at the right cost
- in the right place

- The group was formed to organize medical research information in a systematic way to facilitate the choices that health professionals, patients, policy makers and others face in health interventions according to the principles of evidence-based medicine.

- The group conducts systematic reviews of randomized controlled trials of health-care interventions and diagnostic tests, which it publishes in The Cochrane Library.

Hierarchy of evidence



Type I Resources:

- Resources that give you background and factual information
  Examples - Text books, dictionaries, handbooks, drug information resources
  These are the resources that you study to get your basic degrees

Type II Resources

- Resources related to current and old research
  Examples - Journals, Indexes to Journals, Theses and Dissertations, Conference abstracts

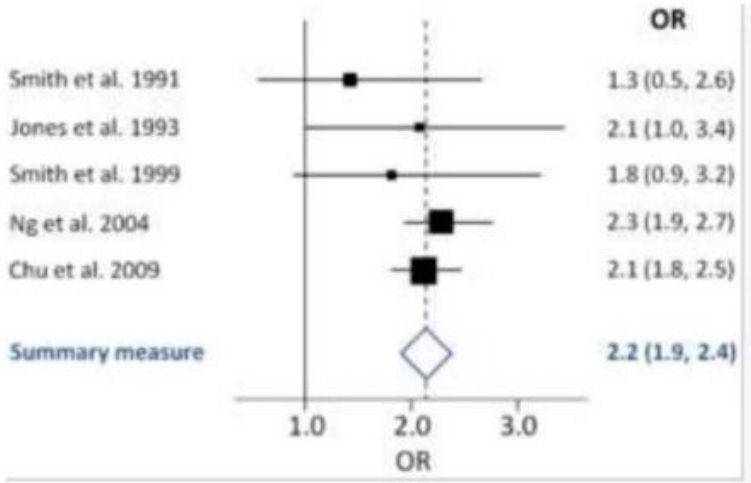
Type III Resources:

- Resources that summarize Research Information from Type II resources and give you an analysis, evidence of what works, directions for patient management, information to compile guidelines or taking public health decisions

Presenting the findings:

❖Forest plots:

- It is a graphical display of estimated results from a number of scientific studies addressing the same question, along with the overall results.



Advantages:

- Results can be generalized to a larger population
- The precision and accuracy of estimates can be improved as more data is used. This, in turn, may increase the statistical power to detect an effect.
- Inconsistency of results across studies can be quantified and analyzed.
- Moderators can be included to explain variation between studies.
- The presence of publication bias can be investigated

Surgically facilitated orthodontic treatment: A systematic review

Eelke J. Hoogeveen, Johan Jansma, and Yijin Ren; April 2014; Vol 145; Issue 4.

- A systematic review was performed to evaluate the evidence supporting that the corticotomy and dental distraction shorten orthodontic treatment duration in adolescent and adult patients.
- **MATERIAL AND METHODS:**

✓ Articles regarding corticotomy -facilitated orthodontics or dental distraction in healthy adolescent or adult patients without periodontal disease were considered.

✓ Randomized controlled trials (RCT), controlled clinical trials (CCT), and case series (CS) with sample sizes of 5 or more patients were eligible for inclusion in this review.

✓ Studies needed to focus on the velocity of tooth movement or treatment time reduction, tissue health or complications, or comparisons between different surgical techniques to be included.

✓ Only full-length articles were considered.

Treatment effectiveness of Fränkel function regulator on the Class III malocclusion: A systematic review and meta-analysis

Xianrui Yang, Chunjie Li, Ding Bai, Naichuan Su, Tian Chen, Yang Xu , Xianglong Han;
August 2014Volume 146, Issue 2, Pages 143–154

Aim:

To assess the effectiveness of the FR-3 in treating patients with Class III malocclusion in the growth and development period.

Methods:

Medline (via PubMed), Cochrane Central Register of Controlled Trials, Embase, Chinese Biomedical Literature Database, China National Knowledge Infrastructure, VIP Database for Chinese Technical Periodicals, Scirus, Lilacs, Scopus, and World Health Organization International Clinical Trials Registry Platform were searched electronically. Relevant journals and reference lists of included studies were manually searched. The quality of the included studies was assessed with the Newcastle-Ottawa scale. The meta-analysis was carried out using RevMan (version 5.2; Nordic Cochrane Centre, Cochrane Collaboration, Copenhagen, Denmark).

Results:

- Seven high-quality cohort studies were included.
- The meta-analysis showed that SNA changes did not differ in the short (mean difference, 0.43°; 95% CI, −0.52°-1.39°) and long (mean difference, 0.37°; 95% CI, −0.29°-1.03°) terms. However, SNB changes significantly differed in the short (mean difference, −1.62°; 95% CI, −2.62° to −0.62°) and long (mean difference, −1.50°; 95% CI, −2.12° to −0.88°) terms.
- By contrast, MPA changes did not differ in the short term (mean difference, 0.55°; 95% CI, −0.74°-1.84°).

Conclusions:

Clinical evidence suggests that the FR-3 might restrict mandibular growth but not stimulate forward movement of the maxilla. Further high-quality studies are necessary to confirm the effectiveness of the FR-3.


Thank
you