Concepts of occlusal form in restorative treatment for stability and optimal function

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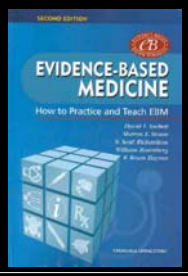
The EBM process



Information need
Question formulation
Literature searching
Critical appraisal
Application
Evaluate Your Performance

Sackett et al. Evidence-based Medicine. 2nd ed. Churchill Livingstone, 2000

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Anatomy of structured questions

P	=	Population	(Among)
I	=	Intervention	(Does)
C	=	Comparator	(v.s.)
O	=	Outcome	(Affect)

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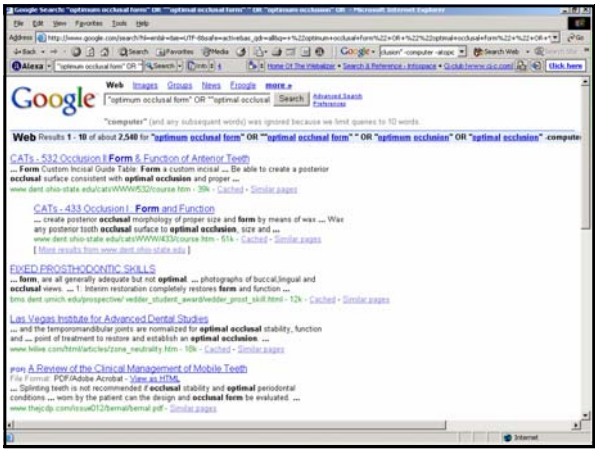
EBM critical appraisal process

Patient / Clinical Problem	Intervention	Comparative intervention	Outcomes
1. Types of "*restorative treatment*" **a) Single teeth** **b) Partial, FPDs/RPDs** **c) Full Fixed Removable** **d) Implant-retained** **2. Fabrication process**	**"*Concepts of occlusal form*"** **- Canine vs group function** **- Tooth types** **- Shorten Dental Arch** **- Intermaxillary relationship** **- …**		What is "***optimal function***"? Which category of outcome criteria is "***stability and optimal function***"? a) Surrogate? b) Clinical? c) Patient-relevant? d) Societal?



"Optimal"

Oxford English Dictionary Online:

Best, most favourable, esp. under a particular set of circumstances

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An ”Optimal” Nose?

Criteria?:

- Smell?
- Breathing obstruction?
- Hairy?

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The ”Optimal” Ear?

The ”optimal” occlusion ?

“*Best, most favourable, esp. under a particular set of circumstances*”

Defined according to morphological deviations from the skull named "Old Glory" on Angle’s bookshelf in the 1890s

Category of outcome criteria?

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Therapy outcomes

a) Surrogate
b) Clinical
c) Patient relevant
e) Societal

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Clinical trials on occlusion issues in context with oral rehabilitation (1980 ->)

	Denture	RPD&FPD	Implant-retained
Cuspid v.s. Group function	Gausch, 1986 Hofmann ea, 1990 Grubwieser ea, 1999 **Peroz ea, 2003**		Jemt ea, 1982
Tooth type (Cusp angle)	**Lamoureux ea, 1999**		**Khamis ea, 1998**
Intermaxillary relations	**Fenlon ea, 1999**		
Fabrication process	**Hickey ea, -69/** Douglas ea,-93 Fahmy ea, 1990		
Other	Molar width	Canti-levers	Abutment resilience (IMZ)

*Randomised Controlled Trial

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Fabrication process (1980 ->)

Study	Methods	Participants	Interventions	Outcomes	Results
Hickey ea 1969/ ++/ Douglas ea 1993	Parallel RCT 20 yrs	Edentulous patients. 2x32 enrolled	a. complex (facebow) b. standard	a. Patient satisfaction b. mucosa c. function tests d. boneloss	No differences
Fahmy et al., 1990	Crossover RCT. Trial period: 2 weeks, no transition period	Edentulous patients. 10 enrolled	a. Conventional complete dentures b. Dentures made with the neutral zone impre. concept	a. Patient comfort & Mastication performance, peanuts	a. Patient comfort: all preferred type b dentures b. Mastication performance: no difference

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Canine vs group occlusion (1980 ->)

Study	Study Method	Participants	Interventions	Outcomes
Peroz ea (2003)	Parallel RCT	22	Denture	Clinical & Subjective
Grubwieser ea (1999)	Experiment	17	Denture	EMG
Hofmann ea (1990)	Experiment	3	Denture	Jaw tracking Dent. retention
Miralles ea (1989)	Experiment	9	Denture	EMG
Manns ea (1987)	Experiment	6	Denture	EMG
Gausch (1986)	Anecdotal	1235 (2125)	Denture	Anecdotal
Jemt ea (1982)	Experiment	17	Implant FPD	Tracking

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Tooth type (cusp angle) (1980 ->)

Study	Methods	Participants	Interventions	Outcomes	Results
Lamoureux ea (1999)	Crossover RCT. Trial period: 8 weeks, no transition period	Patients with problem dentures. 22 enrolled	New dentures w/ 4 occl.surfaces. Morph 6º(a) & 10º(b) ,20º(c) 30º(d).	1. Patient preference	No differences
Khamis et al (1998)	Crossover RCT. Trial period: ? weeks, no transition period	Patients with bar-retained overdenture on implants. 8 enrolled	3 occl.surfaces. Morph 0º(a) & 30º(b) + lingual occlusion.(c)	1. Patient preference & 2. 5 test foods, 1cm3. # cycles (& sec.) to first swallow + to mouth empty	1: a. 0 - b. 57 – c 43% prefs. 2: # cycles > 0-degree morphology

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Intermaxillary relations (1980 ->)

Study	Methods	Participants	Interventions	Outcomes	Results
Fenlon et al (1999)	Cross-sectional examination & Postal survey 3 mths later	Patients fitted with new dentures. 523 enrolled, 429 completed questionnaire	Denture	1.CR–MIP distance 2. OVD vs. Patient usage	Strong association between intermaxillary relations and usage

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Summary – evidence for occlusal design

Cuspid v.s Group function	1 RCT (small) + anecdotal data & experiments, surrogate outcomes
Tooth type (& cusp angle)	2 RCTs (small), short-term
Intermaxillary relations	No RCTs, 1 survey
Fabrication process	2 RCTs (dentures), 1 long-term
Other	None found

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Therapy:

No evidence of effect

is not equivalent to:

evidence of no effect

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1. WHAT IS IMPORTANT IN CLINICAL PRACTICE?
2. IS THERE EVIDENCE FOR A PARTICULAR OCCLUSAL SCHEME?
   1. **occlusal scheme design?**
   2. **lateral guidance and mediotrusive balance?**
   3. **anterior tooth arrangement**

<u>To few well-designed clinical trials to provide unbiased answers</u>

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