Neuroendocrine influence on human jaw movement affected by disorders in the temporomandibular joint complex. A systematic review

Supplementary file

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Systematic Review logic grids and search strategies

PubMed – Breakdown Logic Grid

Mandibular movement[tiab] OR Symmetrical jaw movement[tiab] OR bilateral jaw movement[tiab] OR Asymmetrical jaw movement[tiab] OR Balanced occlusion[tiab] OR Joint equilibrium[tiab] OR Maxillomandibular motion[tiab] OR Jaw joint[tiab] OR condyle[tiab] OR mandibular growth[tiab] OR Temporomandibular Joint[tiab] OR dental occlusion[tiab] OR malocclusion[tiab] OR Orthognathic[tiab] OR Facial Asymmetry[tiab] OR "Mandible"[mh] OR "Temporomandibular Joint"[mh] OR "Dental Occlusion"[mh] OR "Facial Asymmetry"[mh]	Microbio*[tiab] OR Biology[tiab] OR Physiology[tiab] OR Hormone[tiab] OR Endocrine[tiab] OR Calcium[tiab] OR calmodulin[tiab] OR enzyme[tiab] OR serotonin[tiab] OR catecholamine[tiab] OR estrogen[tiab] OR progesterone[tiab] OR testosterone[tiab] OR pituitary[tiab] OR cortisol[tiab] OR sepsis[tiab] OR cyclooxygenase[tiab] OR prostaglandin[tiab] OR human leukocyte antigen[tiab] OR transcription factor[tiab] OR transforming growth factor beta[tiab] OR epithelial growth factor[tiab] OR discoidin[tiab] OR methylation[tiab] OR Nutrition*[tiab] OR Vitamin[tiab] OR Diabetes[tiab] OR Insulin[tiab] OR Thyro*[tiab] OR Iodine[tiab]	Computerised analysis[tiab] OR 3D modelling[tiab] OR Three dimensional modelling[tiab] OR Tomography[tiab] OR Radiomic[tiab] OR imaging[tiab] OR "tomography"[mh]

PubMed [Combined] - 254

(((Mandibular movement[tiab] OR Symmetrical jaw movement[tiab] OR bilateral jaw movement[tiab] OR Asymmetrical jaw movement[tiab] OR Balanced occlusion[tiab] OR Joint equilibrium[tiab] OR Maxillomandibular motion[tiab] OR Jaw joint[tiab] OR condyle[tiab] OR mandibular growth[tiab] OR Temporomandibular Joint[tiab] OR dental occlusion[tiab] OR

malocclusion[tiab] OR Orthognathic[tiab] OR Facial Asymmetry[tiab] OR "Mandible"[mh] OR "Temporomandibular Joint"[mh] OR "Dental Occlusion"[mh] OR "Facial Asymmetry"[mh]) AND (Microbio*[tiab] OR Biology[tiab] OR Physiology[tiab] OR Hormone[tiab] OR Endocrine[tiab] OR Calcium[tiab] OR calmodulin[tiab] OR enzyme[tiab] OR serotonin[tiab] OR catecholamine[tiab] OR estrogen[tiab] OR progesterone[tiab] OR testosterone[tiab] OR thyro*[tiab] OR iodine[tiab] OR pituitary[tiab] OR cortisol[tiab] OR sepsis[tiab] OR cyclooxygenase[tiab] OR prostaglandin[tiab] OR diabetes[tiab] OR insulin[tiab] OR human leukocyte antigen[tiab] OR transcription factor[tiab] OR transforming growth factor beta[tiab] OR epithelial growth factor[tiab] OR discoidin[tiab] OR vitamin OR nutrition* OR methylation[tiab])) AND (Computerised analysis[tiab] OR 3D modelling[tiab] OR Three dimensional modelling[tiab] OR Tomography[tiab] OR Radiomic[tiab] OR imaging[tiab] OR "tomography"[mh])) NOT ("Animals"[Mh] NOT ("Animals"[Mh] AND "Humans"[Mh]))

Scopus and WoS – Breakdown Logic Grid

AND

- "mandibular movement" OR "symmetr* jaw movement" OR "bilateral jaw movement" OR "asymmetrical jaw movement" OR "balanced occlusion" OR "joint equilibrium" OR "maxillomandibular motion" OR "jaw joint" OR condyle OR "mandibular growth" OR "temporomandibular joint" OR "dental occlusion" OR malocclusion OR orthognathic OR "facial asymmetry"
- Hormone OR Endocrine OR Calcium OR Calmodulin OR Enzyme OR Serotonin OR Catecholamine OR Estrogen OR Progesterone OR Testosterone OR Pituitary OR Cortisol OR inflammat* OR Cyclooxygenase OR Prostaglandin OR "human leukocyte antigen" OR "chemical mediator" OR "transforming growth factor beta" OR "epithelial growth factor" OR interleukin OR discoidin
- "Computer* analysis" OR "3D model*" OR "three dimensional model*" OR tomography OR radiomic OR imaging OR "diagnostic imaging"

NOT

- Animal OR reptile OR (Animal* AND Human*)
- Knee OR “cruciate ligament” OR “hip replacement” OR spin* OR mening* OR vertebr*
- “case report” OR “case series” OR “scoping review” OR editorial OR “systematic review”
- Genetic OR gene OR epigenetic OR methylation OR “gene therap*” OR “genetic analysis”

Scopus [Combined] – 701 results on 26.1.23

(TITLE-ABS-KEY ("mandibular movement" OR "symmetr* jaw movement" OR "bilateral jaw movement" OR "asymmetrical jaw movement" OR "balanced occlusion" OR "joint equilibrium" OR "maxillomandibular motion" OR "jaw joint" OR condyle OR "mandibular growth" OR "temporomandibular joint" OR "dental occlusion" OR malocclusion OR orthognathic OR "facial asymmetry") AND TITLE-ABS-KEY (hormone OR endocrine OR calcium OR calmodulin OR enzyme OR serotonin OR catecholamine OR estrogen OR progesterone OR testosterone OR pituitary OR cortisol OR inflammat* OR cyclooxygenase OR prostaglandin OR "human leukocyte antigen" OR "chemical mediator" OR "transforming growth factor beta" OR "epithelial growth factor" OR interleukin OR discoidin) AND TITLE-ABS-KEY ("Computer* analysis" OR "3D model*" OR "three dimensional model*" OR tomography OR radiomic OR imaging OR "diagnostic imaging") AND NOT TITLE-ABS-KEY (animal AND NOT reptile AND NOT (animal* AND human*)) AND NOT TITLE-ABS-KEY (knee AND NOT (cruciate AND ligament) AND NOT renal AND NOT (hip AND replacement) AND NOT spin* AND NOT mening* AND NOT vertebr*) AND NOT TITLE-ABS-KEY ((case AND report) AND NOT (case AND series) AND NOT (scoping AND review) AND NOT editorial AND NOT (systematic AND review)) AND NOT TITLE-ABS-KEY (genetic AND NOT gene AND NOT epigenetic AND NOT methylation AND NOT (gene AND therap*) AND NOT (genetic AND analysis)))

Scopus [Combined] – 462 results on 27.1.23

(TITLE-ABS-KEY ("mandibular movement" OR "symmetr* jaw movement" OR "bilateral jaw movement" OR "asymmetrical jaw movement" OR "balanced occlusion" OR "joint equilibrium" OR "maxillomandibular motion" OR "jaw joint" OR condyle OR "mandibular growth" OR "temporomandibular joint" OR "dental occlusion" OR malocclusion OR orthognathic OR "facial

asymmetry")) AND (TITLE-ABS-KEY (hormone OR endocrine OR calcium OR calmodulin OR enzyme OR serotonin OR catecholamine OR estrogen OR progesterone OR testosterone OR pituitary OR cortisol OR inflammat* OR cyclooxygenase OR prostaglandin OR "human leukocyte antigen" OR "chemical mediator" OR "transforming growth factor beta" OR "epithelial growth factor" OR interleukin OR discoidin)) AND (TITLE-ABS-KEY ("Computer* analysis" OR "3D model*" OR "three dimensional model*" OR tomography OR radiomic OR imaging OR "diagnostic imaging")) AND NOT (TITLE-ABS-KEY (animal OR reptile OR (animal* AND human*))) AND NOT (TITLE-ABS-KEY (knee OR "cruciate ligament" OR renal OR "hip replacement" OR spin* OR mening* OR vertebr*)) AND NOT (TITLE-ABS-KEY ("case report" OR "case series" OR "scoping review" OR editorial OR "systematic review")) AND NOT (TITLE-ABS-KEY (genetic OR gene OR epigenetic OR methylation OR "gene therap*" OR "genetic analysis"))

WOS [Combined] – 510 on 26.1.23

(Mandibular AND movement) OR (Symmetr* AND jaw AND movement) OR (bilateral AND jaw AND movement) OR (Asymmetrical AND jaw AND movement) OR (Balanced AND occlusion) OR (Joint AND equilibrium) OR (Maxillomandibular AND motion) OR (Jaw AND joint) OR condyle OR (mandibular AND growth) OR (Temporomandibular AND Joint) OR (dental AND occlusion) OR malocclusion OR Orthognathic OR (Facial AND Asymmetry) (All Fields) and Hormone OR Endocrine OR Calcium OR Calmodulin OR Enzyme OR Serotonin OR Catecholamine OR Estrogen OR Progesterone OR Testosterone OR Pituitary OR Cortisol OR inflammat* OR Cyclooxygenase OR Prostaglandin OR (human AND leukocyte AND antigen) OR (chemical AND mediator) OR (transforming AND growth AND factor AND beta) OR (epithelial AND growth AND factor) OR interleukin OR discoidin (All Fields) and (Computerised AND analysis) OR (3D AND modelling) OR (Three AND dimensional) OR Tomography OR Radiomic OR imaging OR (diagnostic AND imaging) (All Fields) not Animal OR Reptile OR (Animal* AND Human*) (All Fields) not Knee OR (cruciate AND ligament) OR renal OR (hip AND replacement) OR spinal OR mening* OR vertebr* (All Fields) not (case AND report) OR (case AND series) OR (scoping AND review) OR editorial OR (systematic AND review) (All Fields) not Genetic OR gene OR epigenetic OR methylation OR (gene therap*) OR (genetic analysis) (All Fields)

WOS [Combined] – 355 on 27.1.23

"mandibular movement" OR "symmetr* jaw movement" OR "bilateral jaw movement" OR "asymmetrical jaw movement" OR "balanced occlusion" OR "joint equilibrium" OR "maxillomandibular motion" OR "jaw joint" OR condyle OR "mandibular growth" OR "temporomandibular joint" OR "dental occlusion" OR malocclusion OR orthognathic OR "facial asymmetry" (All Fields) and Hormone OR Endocrine OR Calcium OR Calmodulin OR Enzyme OR Serotonin OR Catecholamine OR Estrogen OR Progesterone OR Testosterone OR Pituitary OR Cortisol OR inflammat* OR Cyclooxygenase OR Prostaglandin OR "human leukocyte antigen" OR "chemical mediator" OR "transforming growth factor beta" OR "epithelial growth factor" OR interleukin OR discoidin (All Fields) and "Computer* analysis" OR "3D model*" OR "three dimensional model*" OR tomography OR radiomic OR imaging OR "diagnostic imaging" (All Fields) not Animal OR reptile OR (Animal* AND Human*) (All Fields) not Knee OR “cruciate ligament” OR renal OR “hip replacement” OR spin* OR mening* OR vertebr* (All Fields) not “case report” OR “case series” OR “scoping review” OR editorial OR “systematic review” (All Fields) not Genetic OR gene OR epigenetic OR methylation OR “gene therap*” OR “genetic analysis” (All Fields)

EBSCOHost DOSS – Breakdown Logic Grid

TI ("mandibular movement" OR "symmetr* jaw movement" OR "bilateral jaw movement" OR "asymmetrical jaw movement" OR "balanced occlusion" OR "joint equilibrium" OR "maxillomandibular motion" OR "jaw joint" OR condyle OR "mandibular growth" OR "temporomandibular joint" OR "dental occlusion" OR malocclusion OR orthognathic OR "facial asymmetry") OR AB ("mandibular movement" OR "symmetr* jaw movement" OR "bilateral jaw movement" OR "asymmetrical jaw movement" OR "balanced occlusion" OR "joint equilibrium" OR "maxillomandibular motion" OR "jaw joint" OR condyle OR "mandibular growth" OR "temporomandibular joint" OR "dental occlusion" OR malocclusion OR orthognathic OR "facial asymmetry") OR DE "Mandible" OR DE "Temporomandibular Joint" OR DE "Dental Occlusion"	TI (Hormone OR Endocrine OR Calcium OR Calmodulin OR Enzyme OR Serotonin OR Catecholamine OR Estrogen OR Progesterone OR Testosterone OR Pituitary OR Cortisol OR inflammat* OR Cyclooxygenase OR Prostaglandin OR "human leukocyte antigen" OR "chemical mediator" OR "transforming growth factor beta" OR "epithelial growth factor" OR interleukin OR discoidin) OR AB (Hormone OR Endocrine OR Calcium OR Calmodulin OR Enzyme OR Serotonin OR Catecholamine OR Estrogen OR Progesterone OR Testosterone OR Pituitary OR Cortisol OR inflammat* OR Cyclooxygenase OR Prostaglandin OR "human leukocyte antigen" OR "chemical mediator" OR "transforming growth factor beta" OR "epithelial growth factor" OR interleukin OR discoidin)	TI ("Computer* analysis" OR "3D model*" OR "three dimensional model*" OR tomography OR radiomic OR imaging OR "diagnostic imaging") OR AB ("Computer* analysis" OR "3D model*" OR "three dimensional model*" OR tomography OR radiomic OR imaging OR "diagnostic imaging") OR DE "tomography" OR DE "THREE-dimensional modeling"

DOSS Combined - 187

(TI ("mandibular movement" OR "symmetr* jaw movement" OR "bilateral jaw movement" OR "asymmetrical jaw movement" OR "balanced occlusion" OR "joint equilibrium" OR "maxillomandibular motion" OR "jaw joint" OR condyle OR "mandibular growth" OR "temporomandibular joint" OR "dental occlusion" OR malocclusion OR orthognathic OR "facial asymmetry") OR AB ("mandibular movement" OR "symmetr* jaw movement" OR "bilateral jaw movement" OR “sella turcica” OR "asymmetrical jaw movement" OR "balanced occlusion" OR "joint equilibrium" OR "maxillomandibular motion" OR "jaw joint" OR condyle OR "mandibular growth" OR "temporomandibular joint" OR "dental occlusion" OR malocclusion OR orthognathic OR "facial

asymmetry") OR DE "Mandible" OR DE "Temporomandibular Joint" OR DE "Dental Occlusion") AND (TI (Hormone OR Endocrine OR Calcium OR Calmodulin OR Enzyme OR Serotonin OR Catecholamine OR Estrogen OR Progesterone OR Testosterone OR Pituitary OR Cortisol OR inflammat* OR Cyclooxygenase OR Prostaglandin OR "human leukocyte antigen" OR "chemical mediator" OR "transforming growth factor beta" OR "epithelial growth factor" OR interleukin OR discoidin) OR AB (Hormone OR Endocrine OR Calcium OR Calmodulin OR Enzyme OR Serotonin OR Catecholamine OR Estrogen OR Progesterone OR Testosterone OR Pituitary OR Cortisol OR inflammat* OR Cyclooxygenase OR Prostaglandin OR "human leukocyte antigen" OR "chemical mediator" OR "transforming growth factor beta" OR "epithelial growth factor" OR interleukin OR discoidin)) AND (TI ("Computer* analysis" OR "3D model*" OR "three dimensional model*" OR tomography OR radiomic OR imaging OR "diagnostic imaging") OR AB ("Computer* analysis" OR "3D model*" OR "three dimensional model*" OR tomography OR radiomic OR imaging OR "diagnostic imaging") OR DE "tomography" OR DE "THREE-dimensional modeling")

Embase – Logic grid breakdown (343)

<table>
<tr>
<td>(Mandibular movement
OR
Symmetrical jaw movement
OR
bilateral jaw movement
OR
Asymmetrical jaw movement
OR
Balanced occlusion
OR
Joint equilibrium
OR
Maxillomandibular motion OR
Jaw joint OR
condyle OR
mandibular growth OR
Temporomandibular Joint OR
dental occlusion
OR
malocclusion
OR
Orthognathic OR
Facial Asymmetry).ti,ab

OR

Exp Mandible OR
Exp Temporomandibular Joint
OR exp tooth occlusion OR
face asymmetry.sh</td>
<td>(Microbio* OR
Biology OR
Physiology OR
Hormone OR
Endocrine OR
Calcium OR
calmodulin OR
enzyme OR
serotonin OR
catecholamine OR
estrogen OR
progesterone OR
testosterone OR
pituitary OR
cortisol OR
sepsis OR
cyclooxygenase OR
prostaglandin OR
human leukocyte antigen OR
transcription factor OR
transforming growth factor
beta OR
epithelial growth factor OR
discoidin OR
methylation).ti,ab</td>
<td>(Computer* analysis OR
3D modelling OR
Three dimensional
modelling
OR
Tomography OR
Radiomic OR
Imaging).ti,ab

OR

Tomography.sh OR exp
three-dimensional imaging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOT: (exp animal/ or animal
experiment/ or nonhuman/)
not (exp human/ or
human experiment/)</td>
</tr>
</table>

Articles excluded upon full text review

Author	Article title	Reason for exclusion
Soo Min, 2020	Local Injection of Growth Hormone for Temporomandibular Joint Osteoarthritis	Animal study
Hamid, 2020	Dose-Dependent Clinical, Radiographic, and Histopathologic Changes of 17β-Estradiol Levels Within the Temporomandibular Joint: An Experimental Study	Animal study
Jiao, 2018	Experimental study on mandibular length and facial symmetry of low estrogen level and anterior disc displacement of temporomandibular joint	Animal study
Deniz, 2013	Analysis of hormone relaxin in the synovial fluid of patients with temporomandibular disorders	Conference proceeding
Han, 2010	Influence of intra-articular corticosteroid on the efficacy of arthrocentesis in treatment of temporomandibular joint anterior disc displacement without reduction	Full English text not found
Nemtoi, 2013	Quantitative and qualitative bone assessment of the posterior mandible inpatients with diabetes mellitus: a cone beam computed tomography study	Full English text not found
Taner, 2019	Volumetric and three-dimensional examination of sella turcica by cone-beam computed tomography: reference data for guidance to pathologic pituitary morphology	Full English text not found
Averyanov, 2021	Systemic approach to diagnosis and treatment planning of occlusion anomalies in adult patients with dentition defects and deformities residing in the iodine-deficient region	Full English text not found
Tanghiloo, 2020	Relationship between the dimensions of Sella Turcica with the vertical skeletal pattern of the face on cone beam computed tomography (CBCT) images in an Iranian population	Full English text not found

Mikami, 2014	Cytopathologic Diagnosis on Joint Lavage Fluid for Patients with Temporomandibular Joint Disorders	No neuroendocrine component documented
Matsumoto, 2006	Cytokine profile in synovial fluid from patients with internal derangement of the temporomandibular joint: A preliminary study	No neuroendocrine component documented
Nakawaki, 2017	Growth hormone receptor gene variant and three-dimensional mandibular morphology	No neuroendocrine component documented
Murakami, 1998	Intra-articular levels of prostaglandin E2, hyaluronic acid, andchondroitin-4 and -6 sulfates in the temporomandibular joint synovialfluid of patients with internal derangement	No neuroendocrine component documented
Bartosz, 2020	Association of Estrogen Receptor 1 and Tumor Necrosis Factor αPolymorphisms with Temporomandibular Joint Anterior Disc Displacement without Reduction	No neuroendocrine component documented
Cevidanes, 2014	3D osteoarthritic changes in TMJ condylar morphology correlates with specific systemic and local biomarkers of disease	No neuroendocrine component documented
Bollhalder, 2020	Magnetic resonance imaging followup of temporomandibular joint inflammation, deformation, and mandibular growth in juvenile idiopathic arthritis patients receiving systemic treatment	No neuroendocrine component documented
Voog, 2004	Progression of radiographic changes in the temporomandibular joints of patients with rheumatoid arthritis in relation to inflammatory markers and mediators in the blood	No neuroendocrine component documented
Dasgupta, 2017	Sella Turcica Bridging As A Predictor Of Class II Malocclusion–An Investigative Study	No neuroendocrine component documented
Voog, 2003	Inflammatory mediators and radiographic changes in temporomandibular joints of patients with rheumatoid arthritis	No neuroendocrine component documented

Ulmner, 2020	Synovial tissue cytokine profile in disc displacement of the temporomandibular joint	No radiographic references of occlusion or TMJ provided
Rodic, 2021	Bone quality analysis of jaw bones in individuals with type 2 diabetesmellitus-post mortem anatomical and microstructural evaluation	No radiographic references of occlusion or TMJ provided
Ito, 2021	Computed tomography texture analysis of mandibular condylar bone marrow indiabetes mellitus patients	No radiographic references of occlusion or TMJ provided
Almalki, 2022	Association of Salivary IGF and IGF/IGFBP-3 Molar Ratio with Cervical Vertebral Maturation Stages from Pre-Adolescent to Post-Adolescent Transition Period—A Cross-Sectional Exploratory Study	No radiographic references of occlusion or TMJ provided
Habibi, 2012	Safety and efficacy of US-guided CS injection into temporomandibular joints in children with active JIA	No radiographic references of occlusion or TMJ provided
Jolly, 2013	Assessment of Maxillary and Mandibular Bone Density in Controlled Type IIDiabetes: A Computed Tomography Study	No radiographic references of occlusion or TMJ provided
Sumukh, 2021	The Comparative Evaluation of the Morphology and Dimensions of the Sella Turcica in Skeletal Class III Patients and Patients With Unilateral Cleft Lip and Palate in Post-Pubertal Age Group	No radiographic references of occlusion or TMJ provided
Hezam, 2020	Computed Tomography Evaluation of Sella Turcica Dimension in Skeletal Class III Malocclusion Among Adult Ukrainian Peoples	No radiographic references of occlusion or TMJ provided
Doetzer, 2021	Association of estrogen receptor alpha 1 and TMJ dysfunction: A pilot study	No radiographic references of occlusion or TMJ provided
Hirahara, 2022	Quantitative assessment of the mandibular condyle in patients with diabetes mellitus using difusion-weighted magnetic resonance imaging	No radiographic references of dynamic parameters of occlusion or TMJ provided

Cochrane GRADE critical appraisal results

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	TMJ disorders	Control	Relative (95% CI)	Absolute (95% CI)		
Antonarakis, 2018												
1	observational studies	serious[a,b]	not serious	not serious	not serious	all plausible residual confounding would reduce the demonstrated effect	0 cases -	0 controls 0.0%	not estimable	- -	⨁⨁◯◯ Low	
Arabshahi, 2005												
1	observational studies	serious[c,d,e,f]	not serious	not serious	not serious	all plausible residual confounding would reduce the demonstrated effect			not estimable		⨁⨁◯◯ Low	
Fred, 2020												
1	observational studies	not serious	not serious[g,h]	not serious	not serious	all plausible residual confounding would suggest spurious effect, while no effect was observed		0.0%	not estimable		⨁⨁⨁◯ Moderate	
Lochbuhler, 2015												
1	observational studies	not serious	not serious	not serious	not serious	all plausible residual confounding would reduce the demonstrated effect dose response gradient			not estimable		⨁⨁⨁⨁ High	
Moystad, 2007												
1	randomised trials	not serious[i]	not serious	serious[j]	not serious	all plausible residual confounding would reduce the demonstrated effect dose response gradient			not estimable		⨁⨁⨁⨁ High	
Ringold, 2008												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	TMJ disorders	Control	Relative (95% CI)	Absolute (95% CI)		
1	observational studies	not serious	serious[h,k]	not serious	not serious	all plausible residual confounding would reduce the demonstrated effect dose response gradient			not estimable		⨁⨁⨁◯ Moderate	

Stoll, 2012

1	observational studies	not serious[l]	not serious	not serious	not serious	all plausible residual confounding would reduce the demonstrated effect			not estimable		⨁⨁⨁◯ Moderate	

Yavuz, 2018

1	randomised trials	not serious	not serious	serious[m,n]	not serious	none			not estimable		⨁⨁⨁◯ Moderate	

Berg, 2009

1	observational studies	not serious	not serious	not serious	not serious	all plausible residual confounding would reduce the demonstrated effect dose response gradient			not estimable		⨁⨁⨁⨁ High	

Richey, 1995

1	observational studies	not serious	not serious	serious[o]	not serious	strong association all plausible residual confounding would reduce the demonstrated effect	0 cases 0 controls		not estimable	-	⨁⨁⨁◯ Moderate	
							-	0.0%				

Masoud, 2012

1	observational studies	serious[p]	not serious	not serious	not serious	all plausible residual confounding would suggest spurious effect, while no effect was observed dose response gradient			not estimable		⨁⨁⨁◯ Moderate	

Gus, 2015

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	TMJ disorders	Control	Relative (95% CI)	Absolute (95% CI)		
1	observational studies	serious[q,r]	serious[s]	not serious	not serious	strong association			not estimable		⨁◯◯◯ Very low	

Hajati, 2009

1	observational studies	not serious	not serious	not serious	not serious	all plausible residual confounding would reduce the demonstrated effect dose response gradient			not estimable		⨁⨁⨁⨁ High	

Shen, 2022

1	observational studies	serious[t]	not serious	not serious	not serious	all plausible residual confounding would reduce the demonstrated effect			not estimable		⨁⨁◯◯ Low	

Suenaga, 2001

1	observational studies	not serious	not serious	not serious	not serious	all plausible residual confounding would reduce the demonstrated effect			not estimable		⨁⨁⨁◯ Moderate	

Xiong, 2019

1	observational studies	serious[u]	not serious	not serious	not serious	all plausible residual confounding would suggest spurious effect, while no effect was observed dose response gradient			not estimable		⨁⨁⨁◯ Moderate	

Leszczyszyn, 2021

1	observational studies	serious[v,w]	not serious	not serious	serious[x]	none			not estimable		⨁◯◯◯ Very low	

Feldreich, 2012

1		serious[y]	serious[z]	not serious	not serious		0 cases 0 controls			-		

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	TMJ disorders	Control	Relative (95% CI)	Absolute (95% CI)		
	observational studies					all plausible residual confounding would reduce the demonstrated effect dose response gradient	-	0.0%	not estimable		⨁⨁◯◯ Low	

Kajii, 2005

1	observational studies	serious[aa]	not serious	not serious	not serious	none			not estimable		⨁◯◯◯ Very low	

CI: confidence interval

Explanations

a. patients who underwent corticosteroid therapy had smaller mouth openings at baseline comparison

b. Case and control groups were not equally distributed

c. Different compositions of exogenous corticosteroids applied.

d. Dosage applied based on empirical evaluation

e. 82% of the patients received NSAIDs at some point of the treatment

f. Not all participants underwent MRI imaging

g. Corticosteroid class was switched from Methylprednisolone to Triamcinolone

h. Details of patients receiving the two forms of exogenous corticosteroid were not mentioned

i. Relied on a subjective scoring system to compare signs of bilateral involvement

j. Dosage of exogenous administration were not mentioned

k. Imaging modality was neither standardised, nor adequately documented across all patients

l. The lack of randomisation and control group could influence the selection and interpretation of the reports

m. Events during follow-up requiring re-administration of corticosteroid was not documented

n. Scoring of imaging scans were not documented

o. Details from radiographic evaluation were not mentioned

p. Orientation of neck stature during cervical spine radiograph can distort the intervertebral space and lead to inappropriate classifications

q. No healthy control was established

r. No quantitative approaches followed for the measurement of occlusal parameters

s. Possibilities of causation and correlation were not reported

t. Methods for recording jaw movement parameters were not documented

u. Age range of control group not adequately matched

v. Biases involving radiographic interpretation were not described

w. Classes were not equally distributed

x. The outcomes surrounding the provision of D3 supplements hinges on patient truthfulness

y. Baseline mouth opening values for healthy control was not provided.

z. Conditions and outcomes for patients receiving different imaging scans were not documented

aa. Jaw movement measurements were not recruited from healthy volunteers as an eligibility criterion

Imaging techniques applied within the included articles

Author, year	Type of radiomic data used
Antonarakis, 2018	MRI (1.5T Avanto, Siemens; Germany) with Gadolinium contrast enhancement T1 sequence • TR:TE = 576:13 • Slice = 2.5mm T2 sequence • TR:TE = 3330:94 • Slice = 3mm Proton density • TR:TE = 2580:21 • Slice = 3mm •
Arabshahi, 2005	MRI with Gadolinium contrast enhancement. (Scanning parameters were not mentioned)
Frid, 2020	MRI scan [(3T Magnetom Skyra, Siemens; Germany) or (1.5T Magnetom Aera or Avanto, Siemens; Germany)] T1 Sequence • TR:TE = 681:8 avg • Slice = 2mm T2 Sequence • TR:TE = 3500:71 avg • Slice = 2mm Proton Density • TR:TE = 3470:32 avg Slice = 2mm
Lochbuhler, 2015	MRI Scan (1.5T Signa, GE Medical Systems; USA) with gadolinium contrast enhancement T1 Sequence • TR:TE = 600:11 • Slice = 2mm T2 Sequence • TR:TE = 2840:86 • Slice = 2mm Proton Density • TR:TE = 2660:25 • Slice = 2mm
Moystad, 2007	CT scan (Lightspeed Ultra 3x, GE Medical Systems, USA) • V:A = 120kV:80mA

	FOV = 16 x 16 cm
Ringold, 2008	CT scans and MRI (Details were not mentioned)
Stoll, 2012	MRI T1 sequence • TR:TE = 600:14ms • Slice = 2-3mm T2 Sequence • TR:TE = 3500:105ms • Slice = 2-3mm Proton density • TR:TE = 3500:15ms Slice = 2-3mm
Yauvz, 2018	MRI scan (details were not mentioned)
Berg, 2009 a	MRI scan (Magnetom Sonata; Siemens Medical Systems, Germany) with gadopentetate dimeglumine oral contrast • Amplitude = 40 mT/m • Slew rate = 200 mT/m per ms Lateral cephalograpms taken in centric occlusion at 1.5m distance from X-ray source
Richey, 1995 b	2D radiographs. Details were not mentioned
Masoud, 2012 c	Lateral cephalograms and cervical radiographs. Details were not mentioned
Gus, 2015	MRI (Vantage Atlas-X; Toshiba, Japan)
Hajati, 2009	CT scan (NewTom DVT mod 9000; Verona, Italy)
Shen, 2022	MRI scan (Ingenia; Philips Healthcare Systems, Netherlands) Proton Density • TR:TE = 2000”20 ms • FOV = 11cm Slice = 1mm (0.3mm skip)
Suenaga, 2001	MRI scan (Signa; GE Medical Systems, USA) T1 sequence • TR:TE = 635:30ms (300:12 for fat-suppression) • Slice = 3mm • FOV = 13cm T2 sequence • TR:TE = 3000:100ms Slice = 5mm
Xiong, 2019	CBCT (details not mentioned)
Leszczyszyn, 2021	2D radiography (Intraoral, Panoramic and cephalometric radiography)
Feldreich, 2012	CT and MRI scans. (Detailed description not provided)
Kajii, 2005	MRI scan (details were not provided)

MRI, Magnetic Resonance Imaging; TR:TE, repetition time: echo time (in ms); CT, Computed Tomography; V:A, ratio of voltage and current applied; FOV, Field of View (in cm)