

**Evidence For Improved Systemic Outcomes In Elderly Persons with Type 2 Diabetes Mellitus  
Receiving Dental Care**

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**Table 1: Studies Reporting Positive Outcomes**

Author (Year)	Study Description (Country, Study Site, Type & Duration)	Participants (Sample Size (N), Mean Age (A) (years), DM Duration (DD), Inclusion Criteria for Periodontitis (P), Baseline HbA1c)	Intervention	Outcomes (Change in HbA1c (%), Other Significant Secondary Systemic Outcomes)	Statistical Significance
Zhang et al. (2013)	China; Single Centre; Randomized, Single-blind, Clinical Trial; 6 months	N: 75; A: tx-60.4 & control-62.7; DD: tx-8.6 & control-7.3; P: PPD>5mm & CAL >4mm HbA1c: tx-7.68% & control-7.38%	Tx- OHI + supra/subgingival scaling+manual curettage at baseline; Tx1- SRP & Tx2- Ultrasonic scaling at 3 mths; Control: Usual care + SRP at the end	HbA1c: -0.17% (tx) & n/a (control); FPG: -3mg/dl (tx)	Yes- Intragroup (tx)  Yes- Intergroup (at 3mths)  No- Control
Auyeung et al (2012)	Taiwan; Single Centre; Non-Randomized Clinical Trial; 12 months	N: 100; A: tx1-56 & tx2-56.7 DD: Varied (NS) P: CAL>1.5mm & PPD>5mm HbA1c: tx1-7% & tx2-7.41%	Tx1 & Tx2: SRP + supragingival plaque control at each visit; Two arms: Mild Periodontal Dx and Moderate/Severe Periodontal Dx	HbA1c: -0.26% (tx1) & -0.19% (tx2); CRP: -2.09ng/ml (tx2)	Yes- Intergroup No-Intragroup (tx1 & tx2)
Bharti et al (2013)	Japan; Single Centre; Non-Randomized Clinical Trial; 6 months	N:31; A: tx-60.2 & Control-66.3; DD: N/A P: PPD>4mm HbA1c: tx-7.1% & Control-6.9%	Tx: SRP+10mg local Minocycline ointment X 4wks Control: Nothing	HbA1c: -0.3% (tx) & 0% (control); Serum Adiponectin: tx-1.7ug/ml	Yes-Intra group (tx) No-Inter group and Control
Chen et al (2012)	China; Single Centre; Randomized, Parallel-group, Clinical Trial; 6 months	N: 134; A: tx1-59.9, tx2-57.9 & control- 63.2 DD: tx1-8.7, tx2-6.9 & control-9.6 P: CAL>1mm HbA1c: tx1-7.31%, tx2-7.29% & control-7.25%	Tx1: SRP + subgingival debridement at 3 mths Tx2: SRP + supragingival prophylaxis at 3 mths Control: No tx or OHI until end of study	HbA1c: -1.61% (tx1), -0.03% (tx2) & 2.22% (control); Fasting Plasma Glucose: significant reduction in Tx1	Yes- Intragroup (tx2) No- Intragroup (tx1 and control) and inter group
Khader et al (2010)	Jordan; Multi- Centre; Randomized Clinical Trial; 6 months	N: 58; A: tx-57.1 & control-55.6 DD: tx-7.7 control-8.1 P: PPD>8mm HbA1c: tx-8.6%, control-7.7%	Tx: Full mouth extraction + complete dentures Control: No dental treatment + OHI	HbA1c: -1.37% (tx) & 0.24% (control)	Yes- Intragroup (tx) & intergroup No- Intragroup (Control)

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Koromantzos et al (2012) and (2011)	Greece; Single Centre; Randomized, Single-blind, Clinical Trial; 6 months	N: 60; A: Tx-59.6 & Control-59.4; DD: tx-7.76 & Control-7.84 P: PPD>6mm & CAL>5mm HbA1c: tx-7.87% & Control-7.59%	Tx: Initial SRP + supportive SRP at each visit Control: Supragingival cleaning + SRP at the end of study	HbA1c: -0.72% (tx) & -0.13% (control)	Yes –Intra and inter group
Li et al (2011)	China; Multi-Centre; Randomized, blinded Community Trial; 6 months	N: 66; A: tx1-60.9, tx2-64.2 DD: tx1-6.5, tx2-8.8 & control-7.9 P: PPD>3mm & CAL>3mm HbA1c: tx1-7.64%, tx2-8.15% & control- 8.12%	Tx1- SRP Tx2- Supragingival Prophylaxis Control- Non-clinical therapy	HbA1c: -0.56% (tx1), -1.01% (tx2) & -0.64% (control)	Yes- Intragroup (tx2)
Lin et al (2012)	Taiwan; Single Centre; Randomized, Single-blind, Parallel Group Clinical Trial; 6 months	N: 28; A: tx1-59 & tx2-56.6 DD: >5yrs P: PPD>5mm HbA1c: tx-9.9% & Control-9.3%	Tx1: SRP+ Supragingival Plaque Control Tx2: SRP + local 2% Minocycline gel X 4wks	HbA1c: log (-.082) (tx1) & slight change in Tx2; HbA1c reduction >0.66%: 64% (tx1) & 57% (tx2)	Yes-Intra group (tx1 and tx2) No-Inter group
Navarro-Sanchez et al (2007) and Faria Al-Meida (2006)	Spain; Single Centre; Non-randomized Clinical Trial; 6 months	N: 20; A: tx-57.4 & control-56.4 DD: tx-12yrs P: Generalized periodontitis HbA1c: tx- 7.2%	Tx: SRP +OHI x 4 sessions within one month; Two arms: DM (tx) & Non-DM (control)	HbA1c: -1.3% (tx)	Yes- Intragroup (tx)
Rocha et al (2001)	Mexico; Single-Centre; Randomized, Double-blind, placebo- controlled, Clinical Trial; 6 months	N: 40; A: tx- 56 & control-55 DD: tx-10.9 & control-10.9 P: PPD> 3mm HbA1c: 11.9% (tx) & 13.1% (control)	Tx: SRP+ Alendronate 10mg/day; Control: SRP+ Trivitamin preparation (thiamin 100mg, pyridoxine 50mg, cyanocobalamin 250mg)	HbA1c: -2.5% (tx) & -2.3% (control)	Yes-Intragroup (tx & control) No-Intergroup

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Stewart et al (2001)	United States; Single Centre; Non-Randomized Clinical Trial; 9 months	N: 72; A: tx- 62.4 & control- 67.3; DD: N/A P: N/A HbA1c: 9.5%(tx) & 8.5% (control)	Tx: SRP+OHI Control: Nothing	HbA1c: -1.9% (tx) & -0.8% (control)	Yes- Intragroup (tx & control) and Intergroup
Sun et al (2010)	China; Single Centre: Randomized Clinical Trial: 3 months	N: 156; A: 56.6 (all grps) DD: 5.6 (all groups) P: PPD>4mm, CAL>3mm HbA1c: 7.13%	Tx1: No periodontal intervention Tx2: SRP+ periodontal flap surgery + Tinidazole 1g bid & Ampicillin 0.25g qid x 3dys pre & post periodontal therapy	HbA1c: -0.55(tx) & 0.06%(control); Serum Adiponectin increased (tx1); CRP decreased (tx1 & tx2); IL-6 and TNF- $\alpha$ decreased	Yes

**Table 2. Studies Not Reporting Positive Outcomes**

<b>Author (Year)</b>	<b>Study Description</b> (Country, Study Site, Type & Duration)	<b>Participants</b> (Sample Size (N), Mean Age (A) (years), DM Duration (DD), Inclusion Criteria for Periodontitis (P), Baseline HbA1c)	<b>Intervention</b>	<b>Outcomes</b> (Change in HbA1c (%), Other Significant Secondary Systemic Outcomes)	<b>Statistical Significance</b>
Cirano et al (2012)	Brazil; Single Centre; Randomized, Single Blind, Parallel-group, Clinical Trial; 6 months	N: 31; A: tx1-56.1 & tx2-54.7 DD: N/A P: PPD>5mm HbA1c: tx1-8.1% & tx2-non-diabetic	Tx1 & Tx2- Full Mouth Ultrasonic Debridement + Supragingival prophylaxis; Arms: DM & Non-DM	HbA1c: No change;	No- Intra and Inter group
Gilowski et al (2012)	Poland; Single Centre; Randomized, Double-blind, Placebo-controlled, Parallel-group, Clinical Trial 3 months	N: 34; A: tx1-57.6 & tx2- 56.9 DD: tx1-5 & tx2-6.7 P: PPD>4mm HbA1c: tx1-6.7% & tx2-6.2%	Tx1- SRP+ Doxycycline Hydrochloride (20mg bid x 3mths) Tx2- SRP+ Placebo	HbA1c: 0% (tx1) & 0.1% (tx2);  MMP-8: decreased in tx1	No-Intra and Inter group
Jones et al (2007) and (2007)	United States; Multi-Centre; Randomized, Single-blind Clinical Trial; 4 months	N: 193 A: 59.1 DD: 11.4 (tx) & 14.1(control) P: PPD>4mm HbA1c: 10.0%	Tx: SRP+Doxycycline 100mg qid x 14dys + 0.12% Chlorhexidine rinses bid x 4 mths; Control: usual care x 4 months	HbA1c: -0.63% (tx) & -0.61% (control)	No- Intergroup
Matsumoto et al (2009)	Japan; Single Centre; Randomized, double-blind Clinical Trial; 9 months	N: 27; A: tx1-61.5 & Tx2- 56.4 DD: N/A P: PPD>4mm HbA1c: tx1-7.1% & tx2-7.4%	Tx1: Subgingival scaling + 2% Minocycline Hydrochloride gel at baseline; Tx2- scaling with ultrasonic device at baseline; Both- Supragingival scaling biweekly for two months & at 6 months	HbA1c: 0.3% (tx1) & 0.3% (tx2)	No-intragroup (tx1 & tx2) & intergroup
Promsudthi et al (2005)	Thailand; Single-Centre; Non-randomized Clinical Trial; 3 months	N: 60; A: 61.1 (tx) & 61.6 (control) DD: 8.3 (tx) & 14.4 (control) P: PPD>5mm & CAL >5mm HbA1c: 8.98% (tx) & 9.17%(control)	Tx: SRP + OHI+ Doxycycline 100mg/day x 2 wks; Control: Nothing	HbA1c: 0.19% (tx) & -0.12% (control)	No-Intragroup (tx & control) and Intergroup

