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Describing an effective dental care intervention for the prevention of respiratory tract infections among intensive care patients: subanalysis of a randomized clinical trial

Wanessa Bellissimo-Rodrigues[1], Mayra Menegueti[2], Gilberto Gaspar[3], Edson Nicolini[4], Maria Auxiliadora-Martins[5], Anibal Basile-Filho[5], Roberto Martinez[1], Fernando Bellissimo-Rodrigues*[6]

[1]*Ribeirão Preto Medical School, University of São Paulo ; Infectious Diseases, Internal Medicine*

[2]*Hospital Das Clínicas Faculdade de Medicina Ribeirão Preto; Infection Control Service*

[3]*University Hospital of Ribeirão Preto Medical School, University of São Paulo; Infection Control Service*

[4]*University Hospital of Ribeirão Preto Medical School, University of São Paulo; Intensive Care*

[5]*Ribeirão Preto Medical School, University of São Paulo; Intensive Care*

[6]*Ribeirão Preto Medical School, University of São Paulo ; Social Medicine*

Background: We previously demonstrated that dental care is effective in preventing respiratory tract infections among critical patients. Our aim here was to describe our dental care program and its impact on oral health status.

Material/methods: This is a sub analysis of a randomized clinical trial conducted in a general intensive care unit (ICU) at a tertiary-care public facility, from January 1, 2011 to August 8, 2013. We analyzed data from 254 adult patients who stayed for at least 48 hours in the ICU. The experimental group (n=127) had access to dental care provided by a dentist, 4–5 times a week, besides routine oral hygiene, while the control group (n=127) had access to routine oral hygiene only, performed by the ICU nurse staff.

Results: Baseline oral health status of the enrolled patients was poor and included edentulism,

presence of caries, gingivitis, periodontal pockets and residual tooth roots. Dental care interventions and respective percentual of patients submitted to each of them among experimental group were teeth brushing (100%), tongue scraping (100%), topical application of chlorhexidine (100%), removal of calculus (72.4%), atraumatic restorative treatment of caries (9.2%), and teeth extraction (1.2%). Table 1 describes the evolution of the oral hygiene index-simplified (OHI-S) and the gingival index (GI) observed in both study groups from day 1 to day 28 of ICU admission. Dental treatment was able to prevent most of the episodes of respiratory tract infections, as published elsewhere (adjusted relative risk=0.44, 95% confidence interval=0.20–0.96, p=0.04). No severe adverse event related to dental care was detected.

Table 1. Evolution of the oral hygiene index-simplified (OHI-S) and the gingival index (GI) observed in both study groups from day 1 (baseline) to day 28 of ICU admission.

Study group	Day 1	Day 4	Day 7	Day 14	Day 21	Day 28
Dental treatment Median OHI-S[a] (P_{25}-P_{75})	2.0 (1.5-2.5) n=85	1.2 (0.7-1.7) n=66	0.8 (0.5-1.3) n=45	1.0 (0.5-1.2) n=24	0.7 (0.5-1.2) n=15	0.4 (0.2-0.8) n=6
Control group Median OHI-S (P_{25}-P_{75})	2.3 (1.7-3.0) n=65	2.2 (1.7-2.7) n=48	2.5 (1.7-2.8) n=37	2.3 (1.8-2.6) n=19	1.7 (1.6-2.1) n=4	1.3 (1.0-1.7) n=2
P[b]	-	<0.001	<0.001	<0.001	0.007	0.065
Dental treatment Median GI[c] (P_{25}-P_{75})	0.7 (0.3-1.0) n=85	0.3 (0-0.7) n=66	0.2 (0-0.5) n=45	0.2 (0-0.6) n=24	0.2 (0-0.5) n=15	0 (0-0.2) n=6
Control group Median GI (P_{25}-P_{75})	0.8 (0.5-1.3) n=65	0.8 (0.5-1.0) n=48	0.7 (0.5-1.0) n=37	1.0 (0.5-1.2) n=19	1.1 (0.6-1.3) n=4	1.1 (1.0-1.2) n=2
P[b]	-	<0.001	<0.001	<0.001	0.011	0.033

Abbreviation: P_{25}-P_{75}, interquartil range
[a]OHI-S classification: 0-1.0 (satisfactory), 1.1-2.0 (regular), 2.1-3.0 (deficient), 3.1-6.0 (poor)
[b]Wilcoxon Test
[c]IG classification: 0-1.0 (light gengivitis), 1.1-2.0 (moderate gengivitis), 2.1-3.0 (severe gengivitis)

Conclusions: proposed dental interventions were successful in improving oral health status among critical patients, thus effectively preventing respiratory tract infections.