Prevalence of oral disease in hemodialysis patients: The Oral-D prospective multinational cohort study

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Background

Oral diseases are common in the general population and are associated with socioeconomic status. It is plausible that the prevalence of oral diseases is increased in people on hemodialysis due to impaired role functioning and health status, but this has not been formally established. We conducted a systematic prospective survey of oral lesions in adults on hemodialysis.

Objective

The aim of this study was to conduct a comprehensive and systematic survey of the prevalence of oral diseases in people on hemodialysis. Here we analyze dental, periodontal, salivary and mucosal lesions in adults receiving hemodialysis.

Methods

ORAL-D is a multinational prospective cohort study. We consecutively enrolled adults receiving hemodialysis in 75 outpatient clinics selected randomly from a collaborative dialysis network in Europe and South America. A dental surgeon conducted a standardized examination of dental, periodontal, mucosal and salivary lesions based upon standard dental practice methodology. We analyzed prevalence of oral diseases using descriptive statistics.

Results

4324 (mean age 61 years (SD 16) adults on hemodialysis in the participating clinics received a complete oral examination. Of these, 868 (20%) were edentulous, 996 (30%) had tooth attrition and dental erosion, and 89 (3%) had enamel hypoplasia. The mean decay/missing/filled teeth (DMFT) score was 22 (9), salivary pH was 7.3 (1.4). There was a high prevalence of patients with high buffer capacity (n=1631 [36%]), and only 176 patients (4%) with low buffer capacity. Salivary flow rate before dialysis was 0.5 ml/min (0.8), versus 0.4 ml/min (0.8) post dialysis. 1880 (43%) patients reported mouth dryness, 206 (5%) had oral burning and 304 (7%) reported mouth pain. Periodontitis was present in 3036 (91%) of 3340 dentate patients.

Conclusion

Oral lesions are prevalent in people receiving hemodialysis and may indicate impaired healthcare practices, although further research on the predictors of oral disease in this population is needed.

1. Dental evaluation in patients in the OralD study

Dental disease	Overall population (N=4324)
Edentulous, n (%)	868 (20%)
Dentate, n (%)	3340 (77%)

Dental disease	Dentate population (N=3340)
Number of teeth, n (SD)	17 (9)
Enamel hypoplasia	89 (3%)
Denture	1087 (33%)
Type of denture	
Partial	937 (28%)
Total	144 (4%)
Attrition or dental erosion	1516 (45%)
Cause of attrition/erosion	
Bruxism	996 (30%)
Chemical damage	116 (3%)
Other	393 (12%)
DMFT score	22 (9)
Missing teeth	15 (9)
Decayed teeth	1 (0-3)
Filled teeth	0 (0-2)

2. Periodontal evaluation in patients in the OralD study

Periodontal disease	Dentate population (N=3340)
Periodontitis	3036 (91%)

3. Salivary evaluation in patients in the OralD study

Salivary disease	Overall population (N=4324)
Salivary flow rate (pre-dialysis)	0.5 (0.8)
Salivary flow rate (post-dialysis)	0.4 (0.8)
Buffer capacity	
Low	176 (4%)
Moderate	915 (20%)
High	1671 (36%)
Salivary pH	7.3 (1.4)

4. Mucosal evaluation in patients in the OralD study

Mucosal and gingival disease	Overall population (N=4324)
Mucosal pain	304 (7%)
Mucosa burning	206 (5%)
Dryness	1880 (43%)
Dysgeusia	562 (13%)
Ulcers	70 (2%)
White stain	147 (3%)
Red stain	169 (4%)
Neoformation	85 (2%)
Petechial/ Ecchymoses	331 (8%)
Thrush	192 (4%)
Herpes zoster	21 (0.5%)
Geographical tongue	207 (5%)
Scrotal tongue	450 (10%)
Uremic breath	200 (4.6%)
Previous oral surgery	12 (0.3%)
Other	224 (5%)
Gingival overgrowth	421 (10%)

* Data given as mean ± standard deviation or percentage as applicable

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