Oral health status of Thai patients with chronic kidney disease in sukhothai hospital, Thailand.

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Abstract

Objective: The purpose of the study was to evaluate the link between oral health status CKD patients who were ongoing continuous ambulatory peritoneal dialysis (CAPD) and hemodialysis (HD) in Sukhothai Hospital.

Materials and Methods: A cross-sectional study was conducted at Sukhothai Hospital on two groups of CKD patients: one including 77 patients ongoing CAPD and the other including 23 patients ongoing HD. Each subject was examined for caries by decayed, missing and filling teeth (DMFT) index, while gingival and periodontal status were assessed by PSR. All the examinations were conducted by a single investigator. The results obtained in the present study were analyzed using the statistical software package. The Chi squared test were used to study the qualitative variables. P-values < 0.05 were accepted as statically significant.

Results: 95.7% of HD group and 87% of CAPD group had underlying disease. Ninety-five percent of CKD patients could do daily activities 92% had brushing. The proximal cleaning method was significantly different for patients who were undergoing CAPD and HD. The mean DMFT of HD and CAPD were 12.96±8.60 and 12.71±10.39 teeth/person respectively. The averaged root caries index of HD, CAPD were 1.17±3.46 and 2.12±3.59 teeth/person respectively. The periodontal health of CAPD was bleeding 27.27%, calculus 70.12% and HD was bleeding 13.04%, calculus 69.56%.

Conclusion: The CKD patients treated with dialysis were at a high risk for developing periodontal disease and they exhibited a potential threat for dental decay and xerostomia. Awareness must be raised among dialysis patients, their nephrologists and their dentists about the need for primary dental prevention. All parties must be knowledgeable about the treatment priorities, operative concerns and precautions to be taken in this special population.

Keywords: chronic kidney disease, continuous ambulatory peritoneal dialysis, hemodialysis, oral health status, brushing frequency.

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Introduction

Chronic kidney disease is characterized by a number of systemic complications that result from a profound hydro electrolytic, metabolic, and immunological imbalance. Despite the improvements in patient care and renal replacement therapy, the impact of CKD on patient's morbidity and mortality is extremely high.[1] Recently, a number of non-traditional risk factors for mortality such as chronic inflammation, oxidative stress and extra-osseous calcification were identified in CKD patients, and the presence of those risk factors was associated with poor outcomes in this population.[2] Renal failure is a process that expresses a loss of functional capacity of the nephrons. It is classified into acute, subacute and chronic based on its form of onset and above all on the possibilities for recovery of the structural lesion.[3] Although acute renal failure is reversible in the majority of cases, chronic renal failure presents a progressive course towards terminal renal failure, even if the cause of the initial nephropathy disappears.[4] When the glomerular filtration rate (GFR) is < 15 ml/min, it is necessary to start renal replacement therapy to avoid the serious complications which can lead to the death of the patient. There are three forms of replacement therapy: hemodialysis, peritoneal dialysis and renal transplantion. Dialysis leads to systemic alterations, oral complications and variations in saliva flow rate and composition of saliva,[5–7] if we add to this the lack of compliance with the habits of oral hygiene shown by many of these patients, this population should present a significant prevalence of caries, periodontitis and oral lesions.[8] Researchers estimate that up to 90% of renal patients will show oral symptoms[6,9] and more than 30 oral signs and symptoms have been reported. Some of the presenting signs were an ammonia-like taste and smell, stomatitis, gingivitis and a decreased salivary flow in severe uremic cases.[10] Other uremic oral manifestations which have been reported in literature include tongue coating, mucosal inflammation, mucosal petechiae, ecchymosis, oral ulceration and enamel hypoplasia. High incidences of gingivitis and periodontitis and a low incidence of caries have been reported in uremic patients.[11,12] Oral manifestations of CKD are as follow.[13]

1. Gingival enlargement : Gingival enlargement secondary to drug therapy is the most commonly reported oral manifestation of renal disease. It can be induced by cyclosporine and/or calcium channel blockers.[14,15]

2. Oral hygiene and periodontal disease : the oral hygiene of individual receiving hemodialysis can be poor. Deposits of calculus may be increased.[5,16] There is no good evidence of an increased risk of periodontitis [17–19] although premature bone loss has been reported.[20] Localized suppurative osteomyelitis, secondary to periodontitis, was observed in individual receiving hemodialysis.[21]

3. Xerostomia: Symptoms of xerostomia can arise in many individuals receiving hemodialysis.[12,22] Possible causes include restricted fluid intake, side effects of drug therapy and/or mouth breathing.[23]

4. Oral malodor/bad taste/halitosis: Uremic patients may have an ammonia-like oral odor.[22]

5. Oral malignancy: Kaposi's sarcoma (KS) can occur in the mouths of immunosuppresed renal transplantrecipients.[24] Any increased risk of oral malignancy in CKD. probably reflects the effects of iatrogenic immunosupression, which increases the risk of virallyassociatedtumors, such as KS or non-Hodgkin's lymphoma.[11]

6. Oral infections: Candidosis : angular cheilitis has been described in up to 4% of hemodialysis and renalallograft recipients.[12,25] Other oral candidal lesionssuch as pseudomembranous (1.9%), erythematous (3.8%), and chronic atrophic candidosis (3.8%)

have been reported in allograft recipients.[25] Viral infection, prior to the availability of appropriate anti-viral drugs (*e.g.*, acyclovir, gancyclovir, and valacyclovir), about 50% of renal allograft recipients, who were seropositive for herpes simplex, experienced recurrent, severe, and prolonged HSV infections.[26] However, in recent years, the use of effective antiherpetic regimes has significantly reduced the frequency of such infection.[27,28]

7. Dental anomalies: delayed eruption of permanent teeth has been reported in children with CKD.[29,30] Enamel hypoplasia of the primary and permanent teeth[31,32] with or without brown discoloration can also occur.[29]

8. Bone lesion: A wide range of bone anomalies can arise in CKD. These reflect a variety of defects of calcium metabolism including loss of hydroxylation of 1-hydroxycholecalciferol to active vitamin D (1,25-dihydroxycholecalciferol), decreased hydrogen ion excretion (and resultant acidosis): hyperphosphatemia, hypocalcemia and resultant secondary hyperparathyroidism and interference with phosphate metabolism by dialysis.[33] Orofacial features of renal osteodystrophy due to hyperparathyroidism include bone demineralization, decreased trabeculation, decreased thickness of cortical bone, ground-glass appearance of bone, metastatic soft-tissue calcifications, radiolucent fibrocystic lesions, radiolucent giant cell lesions, lytic areas of bone, jaw fracture (due to trauma or during surgery) and abnormal bone healing after extraction. Orofacial features of renal osteodystrophy related to tooth and periodontium include delayed eruption, enamel hypoplasia, loss of the lamina dura, widening of the periodontal ligament, severe periodontal destruction, tooth mobility, drifting, pulp calcification and pulp narrowing.[12,33,34]

Since the influence of co existing medical condition. The CKD on oral and dental health requires an updated approach, Including an arised need to assess oral and dental health status of uremic patients who undergo dialysis

Objective: The purpose of the study was to evaluate the link between oral health status CKD patients who were ongoing continuous ambulatory peritoneal dialysis (CAPD) and hemodialysis (HD) in Sukhothai Hospital.

Materials and Methods

A crossectional study was conducted between April 1 to December 31, 2013. Among 100 from 110 patients diagnosed with CKD under dialysis, male and female. 77 continuous ambulatory peritoneal dialysis patients (CAPD) and 23 ongoing hemodialysis patients (HD) were recruited from Sukhothai Hospital to participate in this study. This study protocol was approved by the Hospital Ethical Committee of Sukhothai Hospital ethical review board. (Ref. no. of IRB 0027.201/070) Informed consent for completion of a questionnaire and a noninvasive oral examination was obtained from HD patients and CAPD patients registered in a dialysis program at the Sukhothai hospital as of March 9, 2013. The single dentist performed an intraoral examination of each patient. Oral status was recorded using the DMFT index, Root caries index and PSR index collecting data about: number of teeth with decayed, missing or filled teeth (DMF index).The DMFT index and Root caries index were recorded for the caries by using a mouth mirror and the WHO probe which a specifically designed periodontal probe with a 0.5 mm ball tip and a black band between 3.5 and 5.5 mm from the ball tip. The decayed tooth were recorded as (D), missing teeth as (M) and filled teeth as (F) according to WHO criteria.[35] The overall DMFT value was obtained as a sum of the decayed, missing and filled teeth for each patient. The DMFT index is generally expressed as the average number of DMF teeth per person. Periodontal health was assessed by PSR. The American Dental Association and the

American Academy of Periodontology suggest that all routine dental examinations include a screening examination using the Periodontal Screening and Recording (PSR) System.[36] A specially designed lightweight WHO probe which has a band (called the reference marking) located 3.5 to 5.5 mm from the probe tip.[36] was used to record clinical data by sextant and code as 0 (no bleeding and no calculus, pocket depth < 3.5 mm), 1 (bleeding on probing and no calculus, pocket depth < 3.5 mm), 2 (bleeding on probing and calculus is present, pocket depth < 3.5 mm), 3 (pocket depth = 3.5 - 5.5 mm.), 4 (pocket depth = 3.5 - 5.5 mm.) The highest PSR value in the sextant is taken as a PSR value for that sextant[36] The results obtained in the present study were analyzed using the statistical software package. The Chi squared test were used to study the qualitative variables. Statisticalsignificance was taken as a value of $p<0.05$. Datas were presented as mean, standard deviation (SD), and 95% confidence interval of the mean difference. Comparison of between CAPD and HD group.

Results

A total of 100 patients with CKD were include in the patients present study 77 (77%) undergoing CAPD and 23 (23%) undergoing HD and male 55 (55%) female 45 (45%) ranging from 20-91 years. The mean age of patients was 56.29 ± 15.17 years. The mean age of HD was 51.17 ± 13.38 ,and CAPD group was 57.82 ± 16.17 years. The male/female ratio was 12/11 among HD and 43/34 among CAPD. Mean duration of CKD was 2.61 ± 1.88, HD group 4.87 ± 2.92 and CAPD 1.94 ± 0.37 It was found to be significantly. 95.7% of HD group had underlying disease and 87.0% of CAPD group had underlying disease. Ninety-five percent of CKD patients could do daily activities (Table 1),

In terms of dental cleaning behavior, in HD group 100% reported that they brushed their teeth twice daily and 69.6% had inter-dental cleaning, in CAPD group 89.6% reported that they brushed their teeth twice daily and 58.4% had inter-dental cleaning. The proximal cleaning method was significantly different for patients undergoing CAPD versus HD. (Table 2)

Table 1 Characteristic of Chronic Kidney Disease in this study (n= 100)

Characteristic	CKD(n=100)		p-vale
	HD (23)	CAPD (77)	
Age (years)	51.17±13.38	57.82±16.17	0.08
Gender			
-Male	12(52.17%)	43(55.84%)	0.76
-Female	11(47.82%)	34(44.15%)	
CKD(duration(years)	4.87±2.92	1.94±0.37	<0.001
Systemic disease			
-None	1(04.34%)	10(12.98%)	0.01*
-Hypertension	1(04.34%)	23(29.87%)	
-DM	2(08.69%)	9(11.68%)	
-Other	19(82.60%)	35(45.45%)	
Function			
-normal	22(95.65%)	73(94.80%)	1.00
-Need held	1(04.34%)	4(05.19%)	

The prevalence of caries free was 0% and 2% among HD and CAPD group. Deccay, missing and filling (DMFT) of CKD averaged 12.77 ± 9.97 teeth/person. The averaged DMFT of HD, CAPD were 12.96 ± 8.60 and 12.71 ± 10.39 teeth/person respectively. The averaged root caries index of HD, CAPD were 1.17 ± 3.46 and 2.12 ± 3.59 teeth/person respectively The periodontal health of CAPD was bleeding 27.27%, calculus 70.12% and HD was bleeding 13.04%, calculus 69.56%. (Table 3)

Table 2 Assessment of cleaning the mouth

	CKD	
	HD	CAPD
Tooth Brushing -Yes	23(0%)	69(89.61%)
-No	0(0%)	8(10.38%)
Brushing frequency		
- Once daily	3(13.04%)	21(01.29%)
- Twice daily	16(69.56%)	47(61.03%)
- Other	4(17.39%)	9(11.68%)
Cleaning at proximal tooth		
- Yes	16(69.56%)	45(58.44%)
- No	7(30.43%)	32(41.55%)
Methods cleaning at proximal		
- Dental floss	0(0%)	1(01.29%)
- Proximal brush	15(65.21%)	24(31.16%)
- Toothpick	1(04.34%)	14(18.18%)
- Other	7(30.43%)	38(49.35%)

Table 3 Dental and Gingival findings

	CKD	
	HD	CAPD
Caries free		
- yes	0(0%)	2(2.59%)
- no	21(91.30%)	63(81.81%)
DMFT (CKD=12.77±9.97)	12.96±8.60	12.71±10.39
Decayed	4.96±5.37	4.77±4.42
Missing (due to caries)	6.39±7.70	7.84±9.81
Filling (due to caries)	1.61±3.35	0.10±0.44
Root caries index	1.17±3.46	2.12±3.59
Gingival		
Healthy	3(13.04%)	3(3.89%)
Bleeding	3(13.04%)	21(27.27%)
Calculus	16(69.56%)	54(70.12%)
3.5 < pocket depth < 5.5 mm.	1(04.34%)	3(3.89%)
pocket depth > 5.5 mm.	1(04.34%)	13(16.88%)

Discussion

Several studies have shown a significantly worse dental health in CKD patients compared to healthy controls regarding the DMFT index.[37–39] On the other hand, no significant differences in DMFT index has been found among CKD patients in some studies.[40–42] A previous study had reported that the caries was more in CKD.[43] The results of the 7th national oral health in Thai population survey,[44] show in the 35-44 age group 32.5% had decayed teeth and in seniors groups, 60-74 years, and 80 years 48.3% and had decayed teeth, respectively. The mean DMFT group aged 35-44 years had 6.0 and seniors groups 60-74 years and 80 years. had decayed teeth 14.9. The root caries index show in the 35-44 age group 0.1 and in seniors groups, 60-74 years, and 80 years 0.2.

In this study, both CAPD and HD patients had high decayed teeth.The mean DMFT of HD and CAPD were much difference in DMFT among group aged 35-44 years but little than in seniors groups 60-74 years, and 80 years. The averaged root caries index in HD and CAPD higher than group aged 35-44 years, in seniors groups 60-74 years and 80 years.

CKD is also associated with worse oral health with regard to periodontal loss attachment, periapical lesions, plaque index, gingival index and calculus surface index.[37–39] However, many studies have shown no differences in dental plaque, gingival bleeding, or periodontal indices in patients with less severe CKD compared to healthy control.[40,42] These results revealed a much higher prevalence and severity of periodontal disease than the 7 th, 2012, national oral health survey in Thai population. No significance with PSR score was found between CAPD and HD.

Dialysis patients may form calculus more rapidly than healthy individuals, possibly due to high salivary urea and phosphate levels.[5] Other important risk factors for the development of dental calculus are the ingestion of large quantities of calcium carbonate (used as a phosphate binder), hyperparathyroidism and deficient hygiene[16,45,46]

The poor oral hygiene are associated dental caries and increased periodontitis.[45] In contrast, the bacteremia in patients with dental caries and periodontal disease tends to be more sustained, raising the risk of hematogenous dissemination of the dental infection.[47]

The increased periodontitis and dental caries rates of CKD patients lead to tooth loss, which may result in chewing difficulties because of inadequate occlusive surfaces or the limitations of prostheses.[48] Both gingivitis and periodontitis are seen more frequently in CKD patients.[38,39]

This study found that oral health status CKD patients under dialysis (CAPD, HD) had caries, gingivitis and periodontitis. So we should have measures to prevent and treat oral health in CKD patients who had tendency to poor oral hygiene. CKD patients require special considerations in relation to dental treatment, not only because of the conditions inherent to the disease and its multiple oral manifestations, but also because of the side effects and characteristics of the treatments they receive. Dental management of CKD patients is necessary to consult nephrologist before any dental treatment, in order to determine the condition of the patient, define the best moment for dental treatment, introduce the necessary pharmacological adjustments, or to establish other important aspects for preventing complications in the dental clinic.[48]

Conclusions

In conclusion, the study should be further evaluated by doing on larger samples. The incidence of CKD patients continues to rise worldwide. Many researchers have shown the relevance of oral status in CKD patients. Since

one of the major complications in CKD patients is sepsis, and the infectious diseases in the oral cavity may act as a foci for systemic diseases or injury in other sites of the body. Awareness must be raised among dialysis patients, their nephrologists and their dentists about the need for primary dental prevention. Dentists will probably see more dialysis patients in the future, given the 10% to 15% annual growth in the incidence of end-stage renal disease. All parties must be knowledgeable about the treatment priorities, operative concerns and precautions to be taken in this special population. Finally, unsatisfactory daily oral hygiene habits and insufficient awareness of the importance of oral health are essential to both dentists and nephrologists should be aware and attention. Oral promotion and prevention hygiene will hold CKD patients have a better quality of life.

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International Abstract

What is reflection? A conceptual analysis of major definitions and a proposal of a five-component model.

Nguyen QD, Fernandez N, Karsenti T, Charlin B.

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Although reflection is considered a significant component of medical education and practice, the literature does not provide a consensual definition or model for it. Because reflection has taken on multiple meanings, it remains difficult to operationalise. A standard definition and model are needed to improve the development of practical applications of reflection.

Objectives:

This study was conducted in order to identify, explore and analyse the most influential conceptualisations of reflection, and to develop a new theory-informed and unified definition and model of reflection.

Methods:

A systematic review was conducted to identify the 15 most cited authors in papers on reflection published during the period from 2008 to 2012. The authors' definitions and models were extracted. An exploratory thematic analysis was carried out and identified seven initial categories. Categories were clustered and reworded to develop an integrative definition and model of reflection, which feature core components that define reflection and extrinsic elements that influence instances of reflection.

Results:

Following our review and analysis, five core components of reflection and two extrinsic elements were identified as characteristics of the reflective thinking process. Reflection is defined as the process of engaging the self (S) in attentive, critical, exploratory and iterative (ACEI) interactions with one's thoughts and actions (TA), and their underlying conceptual frame (CF), with a view to changing them and a view on the change itself (VC). Our conceptual model consists of the defining core components, supplemented with the extrinsic elements that influence reflection.

Conclusions:

This article presents a new theory-informed, five-component definition and model of reflection. We believe these have advantages over previous models in terms of helping to guide the further study, learning, assessment and teaching of reflection.

Social implications and workforce issues in the oral health of an ageing population

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FAC Wright

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Abstract

A functional and socially acceptable level of oral health is an integral part of healthy ageing. More teeth, more sophisticated dental technology and increasing co-morbidities of an ageing Australian society will have significant impacts on oral health professionals and their capacities to work within expanded teams of health, education and social organizations. Society is adapting its perspective on the social role of older citizens; replacing its perception of the elderly as an economic social burden, to one of senior citizens as being a respected and active source of social and economic benefit.

Maintaining general and oral health for older Australians will bring into sharp focus the need for recognizing and managing not only the biological markers associated with ageing and frailty, but also the potential mediators on health outcomes associated with changing health and social behaviours. Increasing social capital of older Australians through national policy initiatives such as the Living Longer Living Better reforms, and greater involvement of allied health and carers' organizations in oral health education and health promotion will set a new scene for the roles of dental professionals. Issues of equity will drive the service delivery agenda, and a socio-cultural shift to 'consumer-directed' health outcomes will shape the range of services, quality of care and support required by an older Australian population. Formal education and training modules for aged care workers, allied health practitioners and geriatricians will develop. The challenge for the dental profession is the coordination and integration of these changes into new models of dental and general health care.

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Dentists' use of behavioural management techniques and their attitudes towards treating paediatric patients with dental anxiety.

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Abstract

Purpose:

The purpose of this study was to explore the relationship between dentists' education in treatment of dental anxiety (DA), dentists' attitudes towards patients with DA and dentists' use of BMT.

Methods:

An anonymous questionnaire was sent electronically to 611 dentists in the Public Dental Service in Norway. Statistical evaluation was done using cross tabulation with Chi square and logistic regression analyses.

Results:

The response rate was 65 % (n = 391). About half of the respondents (53 %, n = 208) had followed postgraduate courses in treating patients with DA. The following were the most common attitudes towards treating young patients with DA: it feels like making a contribution (72 %, n = 286), it is difficult or tiresome (54 %, n = 215) and it is a positive challenge (51 %, n = 203). Dentists who had taken postgraduate courses in DA more often reported anxious patients as a positive challenge (60 vs. 42 %, $p < 0.001$) and were less reluctant to treat these patients (5 vs. 15 %, $p = 0.002$). The most frequently used BMT was tell-show-do (87 %, n = 340), followed by relaxation (35 %, n = 132), distraction (25 %, n = 94), systematic cognitive behaviour therapy (22 %, n = 84) and conscious sedation (18 %, n = 69). Dentists without postgraduate courses in DA used fewer techniques when treating these patients (OR 2.1, 95 % CI 1.3-3.3, $p = 0.001$) compared with dentists who had taken these courses.

Conclusions:

Country of graduation and postgraduate courses in DA had a strong relationship with dentists' use of BMT and dentists' attitudes towards young patients with DA.