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Oral health status and self reported oral habits in patients undergoing hemodialysis (Iran, Kerman 2013)

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A B S T R A C T

The aim of the present study was evaluation of oral health status and oral hygiene habits of dialysis patients. Methods and materials: this cross-sectional study conducted on 77 dialysis patients, who were undergoing renal dialysis in Kerman dialysis centers during the period of 8 months from May to November 2013.data were obtained from check list consisted of demographic data, self reported oral hygiene and clinical examination. The data were analyzed using SPSS 20 soft ware. Linear regression or t-test was used for group's comparison. Significant level was set at 0.05. Out of in 44(57.1%) were men and 33(42.9%) were women. The mean age of subjects was 54.9±14.66 years. Diabetes and hypertension were the two most common reason of chronic kidney disease that leads to dialysis in 28.6% and 18.2% respectively. Oral hygiene in 10.4%, 67.5% and 22.1% of patients were bad, moderate and good respectively. 25% of participants did not brush their teeth and 63.3%did not use dental floss. There was statistically difference between educational level and oral hygiene habits and oral health status (p=0.03). There was also statistically significant differences between duration dialysis and weekly dialysis frequency with oral health habits (p=0.04). Based on the findings of the current study oral health in the dialysis patients is not favorable. Dentists and urologists should work in close cooperation in order to encourage regular dental controls in dialysis patients.

Introduction

Loss of functional capacity of the nephrons independent of its etiology leads to renal failure (Sobrado-Marinho *et al.,* 2007). Diabetes mellitus, hypertension, glomerulonephritis, and renal cystic disease are the most common causes of kidney failure. Incidence and prevalence of kidney failure have increased over the last few years (Proctor *et al.,* 2005). Chronic renal failure (CRF) can affect the oral tissues and lead to gingivitis, xerostomia, and alterations in salivary composition and flow rate (Gavaldá *et al.,* 1999). When glomerular filtration decreases to 15 ml/min, patients need treatment to avoid complications. Hemodialysis is one of the methods of treatment (Roskerr, 2001; Humphrey and Williamson, 2001; Gautam *et al.,* 2014). The number of patients undergoing dialysis is increasing in the world (Murtagh *et al.,* 2007). It is shown that dialysis changes the composition and quantity of saliva and oral diseases (Roskerr, 2001; Humphrey and Williamson, 2001; Gautam *et al.,* 2014). Sobrado-Marinho *et al.* (2007) showed that Portuguese population with chronic kidney diseases had lower teeth and higher quantity of dental plaque than the control group (Sobrado-Marinho *et al.,* 2007). It has been stated that oral diseases can be one of the factors that decrease the quality of life and worsen clinical outcomes in hemodialysis patients (Strippoli *et al.,* 2013). Poor oral health, periodontal status, and unsatisfactory oral hygiene were reported in adult Turkish and Iranian population who underwent hemodialysis (Gurkan *et al.,* 2008; Hajian-Tilaki *et al.,* 2014; Pakpour *et al.,* 2014). Tadakamadla *et al.* (2014) maintained that the prevalence of periodontal pocket was higher in dialysis patients in comparison to the control group (Tadakamadla *et al.,* 2014). In addition, some studies showed dialysis duration had a significant effect on oral hygiene status (Hamissi *et al.,* 2009; Al-Wahadni *et al.,* 2003; Gautam *et al.,* 2014). Recent data suggest periodontitis may be associated with mortality in patients who undergo dialysis (Strippoli *et al.,* 2013). Bhatsang and Patil (2012) asserted that patients with hemodialysis had poor oral health, and bad general health made them neglect oral hygiene (Bhatsange and Patil, 2012). The aim of the present study was to assess the oral hygiene status and oral health habits in patients undergoing dialysis in Kerman (South-East of Iran) dialysis centers.

Materials and Methods

This cross-sectional study was conducted on 77 patients who underwent renal dialysis in Kerman dialysis centers during an eight-month period from May to November 2013. The patients who regularly attended the Nephrology Department entered the study. Informed consent was obtained from all the patients. The inclusion criteria were as follows: age greater than 18 years; and glomerular filtration rate (GFR) < 60 ml/min. On the other hand, the exclusion criteria were the absence of any systemic diseases that could affect the GFR and/or the oral health status, receiving any type of medication that could affect the oral health status, and smoking. Data were obtained from clinical examination and a check list consisting of demographic data (age, sex, marital status, educational level and job) and self report of oral health habits (the frequency of tooth brushing, using dental floss, visiting a dentist in past 6 months and the reasons of visiting a dentist). Information such as the duration of dialysis, frequency of dialysis in one week, GFR level, and dialysis complications was obtained from hospital patients' records. Supragingival plaque index was recorded

based on Silness and Loe plaque index: 0) no plaque accumulation in gingiva,1) a thin plaque attached to free gingival margin and adjacent area of the tooth,2) medium plaque accumulation of soft deposits in the gingival pocket and /or on the gingival margin and the surfaces of adjoining tooth, and 3) many soft materials within the gingival pocket and/or on the gingival margin and adjacent tooth surface. Scores 0 and 1 were classified as good, 2 as moderate, and 3 as bad oral hygiene. Data were analyzed in SPSS version 18 using T-test and regression tests. P-value less than 0.05% was considered as significant.

Results and Discussion

In the present study 44participants (57.1%) were men and 33(42.9%) were women. The mean age of subjects was 54.9±14.66 years. Patients' demographic characteristics are shown in table 1. Dialysis duration in 84.5% of patients was between 1-5 years. Diabetes and hypertension were the two most common reasons of chronic kidney disease that led to dialysis in 28.6% and 18.2% of participants, respectively.49.9% of patients had no complication after dialysis. Out of 19.9% of patients, 10–20 percent had natural teeth and 53.9% had more than 20 natural teeth. Reasons for visiting a dentist for oral and dental examination, filling the teeth, and pain were 57.1%, 22.0% and 20.7% respectively. Oral hygiene in 10.4%, 67.5% and 22.1% of patients was bad, moderate and good respectively. 25% of participants did not brush their teeth and 63.3% did not use dental floss. Table 2 shows patients' oral hygiene habits.27.3% of the patients in the present study used dentures. There were statistically significant differences between the educational level, oral hygiene habits, and oral health status (p=0.03). There were also statistically significant differences between the duration of dialysis and weekly dialysis frequency with oral health habits (p=0.04). The therapeutic methods for patients with CKD such as dialysis increased the life expectancy of these patients (Queiroz et al.). Because of uremic metabolic, CDK patients may suffer from systemic complications. And this has an effect on oral health (Akar *et al.*, 2011). In the present study, 57.1% of patients were male and 42.9% were female. This finding is similar to Yadav *et al.* (2012) Magalhães *et al.* (2013) Gautam *et al.* (2014) that showed the prevalence of end stage kidney diseases was higher in males (Souza *et al.*, 2008; Gautam *et al.*, 2014). The mean age of patients in the present study was 54.99±14.66 years. This is in line with studies of Yada *et al.* (2012) (52.43±12.63) and Rostami *et al.* (54.4±17.1). We can conclude that the prevalence of chronic kidney diseases increases with age. In the present study, the number of patients with diabetes and hypertension was 28.6% and 18.2% respectively. These values are far higher than the measured values obtained by Gavaldá *et al.* (1999) which showed that the pathology causing CRF in hemodialysis patients was due to diabetic nephropathy in 6.8%. This difference can be seen in diabetes depending upon the rural/urban division and the level of economic status. In our study, most of the patients had moderate and poor oral hygiene. These findings are compatible with the studies of Souza *et al.* (2008) Gürkan *et al.* (2008) and Queiroz *et al.* Hajian-Tilaki *et al.* (2014) reported that oral hygiene was poor in 26.6% of patients in their study. Queiroz *et al.* reported poor oral hygiene in 100% of patients if they had gingival bleeding. Sobrado- Marinho *et al.* (2007) showed dental plaque accumulation was greater in chronic kidney failure in comparison to the control group (Sobrado-Marinho *et al.*, 2007). Some oral problems may occur due to the negligence of oral health behaviors and taking into account the

preventive oral health measurements since the patients with CDK are more involved with their CDK treatment (Souza *et al.*, 2008; Gurkan *et al.*, 2008). In the present study, 25%of patients reported that they never brushed their teeth and most patients claimed a good frequency of daily tooth brushing.

Afsar (2013) maintained that regular tooth brushing was relatively low in hemodialysis patients. Oral health providers and nursing staff should encourage these patients to brush their teeth regularly. Almost half of the patients in the present study had more than 20 natural teeth, but 63.6% of them did not use dental floss.

Table.1 Frequency of subjects based on Demographic characteristics

variable		Number	percent
sex	male	44	57.15
	female	33	42.85
Educational level	illiterate	22	28.57
	Primary school	26	33.76
	Below diploma	10	12.98
	diploma	14	18.18
	Higher than diploma	5	6.49
job	jobless	22	28.57
	employment	14	18.18
	retired	17	22.06
	Self employment	24	31.16

Table.2 Frequency of oral hygiene behavior in subjects

Oral health behavior		number	present
Tooth brush frequency	never	14	25.0%
	occasionally	17	28.3%
	Once a day	16	26.6%
	Twice a day	9	15.0%
Using dental floss	yes	21	37.5%
	no	35	62.5%
Visit a dentist in past year	yes	37	48.0%
	no	40	52.0%
Cause of dental visit	Check -up	44	57.1%
	pain	16	20.7%
	filling	17	22.0%

By the same token, Gurkan and Queiroz indicated most of patients undergoing hemodialysis did not use dental floss (Gurkan *et al.*, 2008; Queiroz et al.). Dental floss can remove biofilm accumulation on the interproximal surfaces of teeth. It seems that preventive oral health measures should be accomplished by the health care staffs and this highlights the need to encourage patients for oral hygiene. In the present

study, 57.1% of patients during the year prior to the study visited a dentist. This finding is in line with the study of Queiroz *et al.* in which 44.8% of patients had a visit with a dentist in the past year. We should highlight that this finding did not improve oral hygiene. In our study, 27.3% (21 out of 77) of the patients had removable complete dentures. This finding is compatible with the results of Klassen and Krasko (2002) which showed 53 totally edentate subjects in a group of 147 patients with dialysis. Al-Wahadni and Al Omari (2003) found nine totally edentate subjects in a group of 56 individuals with dialysis. This was lower than our study. This difference may be due to the difference of mean age of the patients in 2 studies. Our results showed a significant difference between dialysis duration and oral hygiene. This difference may be due to patients' concentration on kidney diseases than oral hygiene. We could observe a significant difference between the educational level, weekly dialysis frequency, and oral hygiene. This is in line with the study of Gutam *et al.* (2014). We conclude that educated patients have better jobs and access to dental treatments.

Conclusion

The findings of the present study showed oral health behavior and oral health status in patients undergoing dialysis was not favorable. Poor dentition should be considered as an alarm clock for dialysis patients. Both dentists and nephrologists should train and embed oral health behavior to promote the oral health of patients undergoing hemodialysis.

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