

## Original Article

## Knowledge rate of Dentists Regarding Dental Consideration of Bisphosphonate Drug User Patients

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### ABSTRACT

**Background:** Bisphosphonates have been used in the treatment of osteoporosis, hypercalcemia of malignancy, bone metastasis and osteopenia control. Simultaneous use of bisphosphonates with the dental surgical procedures increases the risk of osteonecrosis in the patients.

**Aim:** The aim of this study was to determine the knowledge rate of general dentists in Ardabil Province regarding dental considerations in the patients using bisphosphonate.

**Methods:** In this descriptive cross-sectional trial, 116 general dentists were selected and studied by a questionnaire included demographic items and knowledge about dental considerations among patients using bisphosphonate. The knowledge scores were classified in 3 groups of weak; moderate and good and collected data analyzed by statistical methods in SPSS.19.

**Results:** The mean knowledge of the dentists was  $14 \pm 3.9$ . Moderate knowledge was seen among 50.9% of dentists. There wasn't significant relation between sex and knowledge rate. However, dentists with the ages under 30 years old showed 3 fold more frequency of good knowledge compared to the dentists over 30 years old ( $p=0.001$ ).

**Conclusion:** Results showed that dentists have proper knowledge regarding dental considerations among the patients using bisphosphonates; Due to the importance of preventions of osteonecrosis risk factors following using bisphosphonates; more instructions are required in this field.

**Key words:** Bisphosphonate, Dental consideration, Knowledge, General dentists

### INTRODUCTION

Bisphosphonates have been used in the treatment of osteoporosis, hyperkalemia of malignancy, bone metastasis, osteopenia control and Paget's disease. Despite the health benefits of these drugs, recently osteonecrosis of the jaws to be mentioned as a serious complication in patients taking them. Bis-Phosphonate related osteonecrosis of the jaw (BRONJ) first proposed in 2003 by Marx and reports of the disease cases are on the rise today [1-7].

In various studies, the risk factors related to the occurrence of BRONJ include dentoalveolar trauma history and duration use of bisphosphonates which dentoalveolar trauma history has been the most common between them [8-10].

Patients, who received intravenous bisphosphonates as compared to patients taking oral medication, are more susceptible to BRONJ.

Concomitant use of corticosteroids increases the risk of BRONJ.

The major risk factor in the development of BRONJ is use of bisphosphonate and its administration method. (0.01-0.04% of oral intake and 0.8-12% on intravenous administration) [11].

In order to prevent the occurrence of osteonecrosis of the jaws, it is necessary for dentists to consider the consumer of these drugs. There is no doubt in the case of preventive measures by dentists; the occurrence of this dangerous disease is prevented. The present study determined the knowledge of general dentists in Ardabil Province regarding dental considerations in the patients using bisphosphonate.

### MATERIALS AND METHODS

In this Cross-sectional descriptive study, 116 general dentists were selected and studied by a

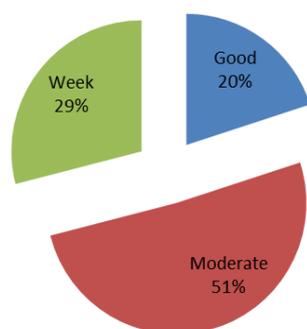
questionnaire included demographic items and knowledge about dental considerations among patients using bisphosphonate. All questions were scored by Likert from 1 to 5 and the total knowledge score were classified in 3 groups of weak (7-12); moderate (12-17) and good (>17). Collected data analyzed by descriptive and analytical statistical methods and Chi-Square test in SPSS.19.  $P < 0.05$  was considered as significant.

## RESULTS

The mean of dentist's duration of employment was  $8.6 \pm 8$  (range 1-35 years) and 64.7% of dentists have duration of employment lower than 10 years.

The mean age of dentists was  $36.2 \pm 9$  (range 24-60) and 69% of dentists were >30 years. The mean knowledge of dentists was  $14 \pm 3.9$  (range 7-23) and 50.9% of dentists have moderate knowledge. (Figure 1)

**Figure 1: The rate of knowledge of dentists about dental procedures in patients taking bisphosphonate drugs**



The rate of good knowledge in dentists with >10 years duration of employee compare to other dentists was up but not statistically significant. (Table 1)

**Table 1: Knowledge rate of dentists by Duration of employee**

Knowledge rate	Weak		Moderate		Good	
	n	%	n	%	n	%
Duration of employee						
< 10 yr	21	61.8	34	57.6	20	8.7
10-20 yr	9	26.5	19	32.2	2	8.7
>20 yr	4	11.8	6	10.2	1	4.3
<b>Total</b>	<b>34</b>	<b>29.3</b>	<b>59</b>	<b>50.9</b>	<b>23</b>	<b>19.8</b>

$P = 0.54$

There was a significant relation between age and knowledge rate, because the good knowledge rate

in dentists with up > 30 years age was 73.9% that about three more than other dentists. (Table 2)

**Table 2: Knowledge rate of dentists by age**

Knowledge rate	Week		Moderate		Good	
	n	%	n	%	n	%
Age group						
<30 yr	4	11.8	15	25.4	17	73.9
>30 yr	30	88.2	44	74.6	6	26.1
<b>Total</b>	<b>34</b>	<b>29.3</b>	<b>59</b>	<b>50.9</b>	<b>23</b>	<b>19.8</b>

$P = 0.001$

There wasn't significant relation between sex and knowledge rate and the rate of all knowledge levels in women proportionally higher than men. (Table 3)

**Table 3: Knowledge rate of dentists by sex**

Knowledge rate	Week		Moderate		Good	
	n	%	n	%	n	%
Sex						
Male	9	26.5	28	47.5	10	43.5
Female	25	73.5	31	52.5	13	56.5
<b>Total</b>	<b>34</b>	<b>29.3</b>	<b>59</b>	<b>50.9</b>	<b>23</b>	<b>19.8</b>

$P = 0.42$

## DISCUSSION

There are many case studies (case-report) and case series on the complication of osteonecrosis of the jaw (BRONJ) in the research backgrounds [12-16].

According to result of this study, we can say that dentists have appropriate knowledge about dental procedures in patients taking bisphosphonates, although some weaknesses were found in this area. The prevalence of BRONJ in patients with intravenous bisphosphonates was 0.8-1.2% and in patients with oral use was 0.00038-.06% [17-18].

Diagnosis of BRONJ not possible easily and may be due to conditions associated with surgery of the mouth area as well as any diagnostics done [19]. Therefore, correct diagnosis BRONJ, in cases of bisphosphonate use is necessary.

Despite the importance of subjective symptoms in patients with BRONJ (bad breath and difficulty eating and speaking), only 53.4% of dentists know these symptoms.

BRONJ lesions appear in radiography as lucent which 48.3% of dentists known this. The most common clinical complication of BRONJ is injured that exposed the underlying bone and 45.7% of dentists true reported to its. BRONJ not respond well to different treatments and, therefore,

prevention and early diagnosis of disease is importance and 42.2% of dentists known it [17].

In Lopez-Jornet and et al study in 2010, only 13.3% of students and 33.3% of dentists have sufficient information about osteonecrosis treatment [20].

It seems in treatments with bone exposes such as removal teeth and Placement of dental implants, preparation of the patient's history of medications is extremely important so that we can reduce the risk of BRONJ.

Bisphosphonate drugs are prescribed for the treatment of bone diseases such as osteoporosis, multiple bone metastases, multiple myeloma and Paget's disease [13].

In this research, 64.7% of dentists reported to the use of bisphosphonate in treatment osteoporosis disease and 53.4% to the treatment of cancer patients.

Some of dental students and dentists not knew the medical indications of bisphosphonate drugs [20-21].

Lopez-Jornet and et al in a study reported that only 30% of dental students and 51.6% of dentists have known about indications of bisphosphonate drugs [20].

Because of possible side effect of taking bisphosphonates is BRONJ, dentists should be aware of the mechanism of action of these drugs.

De Lima and et al in a study showed that 59.6% of dentists and 58% of dental students haven't knowledge about this topic and these findings concern [21].

Dentoalveolar area surgery is a risk factor for osteonecrosis of the jaw, so that if a complication BRONJ had been seen in a radiography of patient we must not out of his teeth which 65.5% of dentists had known it. Also, we must note that in the need for taking bisphosphonates after invasive dental procedures, this must be done after 6 weeks that 31.9% of dentists have enough knowledge about it. Periodontal diseases and the use of denture or implant placement can also be risk factors for prevalence BRONJ which 70.7% of dentists known this subject [14-15].

According to our research, 74% of dentists pointed to the increased risk of BRONJ after concomitant use of steroids with bisphosphonates and 49.1% know that the Susceptibility to BRONJ in patients

receiving bisphosphonates drugs intravenously (IV) was more than other methods and 71.6% truly pointed to incidence of BRONJ after teeth removal.

45.7% of dentists known the mean time for treatment start to necrosis producing in cancer patients or IV injection bisphosphonates which similar to other research [22-24].

The rate of good knowledge in dentist under 30 years old with 73.9% about three times was significantly more than other dentists. Mah and et al in study showed that the dentists in age group 25-35 have the upper knowledge rate which was similar to our study results and also, other results of our study were similar to Mah and et al study [25].

The main purpose of referring patients taking bisphosphonate drugs maxillofacial specialists, prevent or reduce the risk of BRONJ in susceptible individuals. There is no doubt treatment of dental surgery in patients taking bisphosphonate drugs can complain about the dentist and to pursue the matter through legal channels as well as in these cases, the problems will create to the dentist.

Better information of health service providers on bisphosphonate drugs, can reduce the incidence of BROJN and appropriate recovery of patients to be followed [26-27].

On the other hand, improve patient education about how to use and side effects of bisphosphonate drugs by doctors and dentists will lead to improve the quality of medical care and reduce complications associated with medical and dental treatments [24].

## CONCLUSION

The results showed that dentists had appropriate knowledge about dental procedures in patients taking bisphosphonates. Because of the importance of the prevention of the risk factors of osteonecrosis complication after taking bisphosphonate, more education must be provided about this topic to the dentists.

Before dental procedures in patients taking bisphosphonate drugs, dentists should be done complete dental and oral assessments of patients, learn methods of disease prevention and oral health and the risk of such drugs to them.

The lack of opportunities for learning how to perform dental procedures on consumer's bisphosphonate drugs and other reasons can lead to low knowledge of dentists. So, we must increase awareness of general dentists on this topic by

organizing courses and the study of articles published in this issue.

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