Periodontal health is influenced by systemic conditions, one of the most important being Diabetes. There exists a bidirectional relationship between both of these conditions as severe periodontitis may increase the risk of poor glycemic control. This evaluation of the significant link between diabetes mellitus and periodontal health depends upon the knowledge as well as its application among various practicing dentists and physicians. The scientific evidence supports the concept that, treating periodontal infections can be influential to the glycemic control management and reduction of complications of diabetes mellitus. Hence our current study aims to evaluate the awareness of the bidirectional relationship between periodontal health and diabetes mellitus among practitioners. A questionnaire was provided to 50 dentists and 50 physicians and it was concluded that doctors need to be made aware of the bidirectional relationship between dentists and physicians.

A new branch of medicine called as “medical periodontology” was introduced by William and Offenbacher. They implicated the two way relationship between systemic conditions like diabetes, cardiovascular, cerebrovascular and respiratory and periodontal diseases. There may be changes in the collagen metabolism, gingival crevicular fluid, host response and the tissue micro flora in case of diabetes mellitus. Inflammatory mediators like interleukin (IL)-1, IL-6 and tumour necrosis factor (TNF) alpha are produced by inflamed periodontal tissues which alter the glycemic control thus affecting the glucose and lipid metabolism.

There are numerous studies conducted which show that very few patients with diabetes visit dentists for regular check-ups to assess their periodontal health status and are unaware of the knowledge of the general oral health maintenance. Allen conducted a study in which he assessed the knowledge of patients with diabetes about periodontal diseases and found that they had a very low knowledge of this relationship, as compared to increased awareness for the increased risk of eye diseases, heart disease, kidney disease and circulatory problems. Also there were studies conducted on the assessment of the behaviour and attitude of dentists towards the treatment of patients having diabetes. It was found out that very few dentists convey with the patient’s physicians regarding their diabetes status as well as monitoring their glucose levels.

The World Health Organisation (WHO) has divulged information that oral diseases including periodontal diseases are grave and periodontal health is an important constituent of general health of an individual. Hence physicians and dentists should be aware of this bidirectional relationship and appropriately chalk out the patient’s treatment plan and prognosis.

The aim of our study was to conduct a survey and assess this knowledge of the awareness of the relationship between diabetes and periodontal disease among physicians and dentists.

Materials and Methods:
The survey was carried out in the city of Mumbai. A clearance from the ethical committee was obtained before the start of the study. A total of 100 participants were randomly chosen for this study amongst which 50 were dentists and 50 were physicians. An informed written consent was taken from all these participating in the survey.

A structured questionnaire was designed to be self-administered by the participants.

The first part of the questionnaire included the demographic data like age, sex, years in practise. The second part of the questionnaire included the participant’s (physicians and dentists) view on the relationship of the following complications of periodontal disease and diabetes: a) gingival inflammation, b) gingival bleeding, c) alveolar bone resorption, d) tooth loss, e) tooth mobility and f) periodontal abscess. The third part of the questionnaire included the oral health recommendations whether diabetic patients require regular dental check-ups and dental prophylaxis. Finally the knowledge of the two way association of the bidirectional relationship between diabetes and
periodontal health was analysed. The participants were told to answer in three categories 'YES', 'NO', 'DON'T KNOW'. A score of One was given to every question answered with YES and a score of Zero as assigned to the answers of NO and DON'T KNOW.

Results:
A total of 100 participants (50 physicians and 50 dentists) completed the questionnaire. All the participants responded to the questionnaire so the response rate was 100 percent. The mean age of dental practitioners was 32 years and of physicians was 34 years. All the sociodemographic characteristics (Age, Sex and Years of Graduation) of the participants showed no statistical differences between participating dentists and physicians regarding any characteristic. (Graph 1, Graph 2)

Table 1 presents the reported knowledge of specific periodontal complications associated with Diabetes Mellitus. Around 65% of the study participants on an average were aware of specific periodontal complications coupled with Diabetes. Only 52% of all study participants were aware that tooth loss because of periodontal diseases is frequent among diabetics. The dentists (60%) were significantly more (p < 0.05) aware about the tooth loss than physicians. (36%) Similarly the dentists were more aware about other complications like gingival inflammation, gingival bleeding, tooth mobility, periodontal abscesses and alveolar resorption as compared to the physicians. The difference in awareness was significantly higher (p < 0.05) in the dentists for gingival bleeding, periodontal abscesses and tooth mobility compared to the physicians.

Table 2: Dental Care Recommendations for Patients with Diabetes Mellitus

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Physicians (n[%])</th>
<th>Dentists (n[%])</th>
<th>p value</th>
<th>All participants (n[%])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with poorly controlled diabetes should have more frequent dental check up</td>
<td>47 (94)</td>
<td>50 (100)</td>
<td>0.242</td>
<td>97 (97)</td>
</tr>
<tr>
<td>Patients with poorly controlled diabetes should have more frequent scaling</td>
<td>31 (62)</td>
<td>41 (82)</td>
<td>0.044*</td>
<td>72 (72)</td>
</tr>
</tbody>
</table>

*Level of significance (p < 0.05)

Awareness of the current scientific evidence regarding the connection between DM and periodontal health is presented in Table 3. Majority of study participants (71%) agreed that diabetes affects periodontal health. On the other hand only 52% of the participants reported that they were aware of the two way relationship between Diabetes and periodontal health with dentists being more aware about the relationship. However the awareness was non-significant. (p > 0.05)

Table 3: Awareness of the Association between Diabetes Mellitus and Periodontal Health

<table>
<thead>
<tr>
<th>Diabetes Mellitus and Periodontal Health</th>
<th>Physicians (n[%])</th>
<th>Dentists (n[%])</th>
<th>p value</th>
<th>All participants (n[%])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with poorly controlled diabetes and Periodontal Health</td>
<td>32 (64)</td>
<td>39 (78)</td>
<td>0.186</td>
<td>71 (71)</td>
</tr>
<tr>
<td>Two way relationship between Diabetes and Periodontal Health</td>
<td>21 (42)</td>
<td>31 (62)</td>
<td>0.071</td>
<td>52 (52)</td>
</tr>
</tbody>
</table>

*Level of significance (p < 0.05)

The attitudes of study participants regarding specific oral health recommendations for patients diagnosed with diabetes are presented in Table 2. Majority of the study participants (97%) agreed regular dental check-ups for patients with poorly controlled diabetes are important. Dentists were significantly more aware of the importance of frequent dental maintenance and scaling for patients with poorly controlled diabetes than were physicians (p < 0.05).
Discussion:
A very few amount of studies have been conducted to assess the knowledge of physicians and dentists of the various periodontal conditions and the bidirectional relationship between diabetes and periodontal health. The FDI, World Dental Federation along with the International Diabetes Federation emphasised that it is essential to increase the knowledge of the association between diabetes and oral health among various health professionals. Majority of the participants in our survey agreed that gingival inflammation in diabetics and regular dental visits are important. A total of 62% of physicians were aware of the association of diabetes and periodontal health and the link of tooth loss and gingival bleeding with diabetes as compared with dentists who were more aware of the specific complications of diabetes and periodontal health. However a very less percentage of physicians were aware of the association of alveolar bone resorption, tooth mobility and periodontal abscess with diabetes. There are various studies conducted which show that periodontal diseases associated with diabetes are considered to be one of the main reasons for tooth loss. The reason for the low awareness of the periodontal complications in patients in diabetes may be attributed towards the fact that the physicians may be focussed towards the overall systemic conditions whereas dentists are more focussed towards the oral health maintenance. It is also known that dentists may not frequently communicate with the physicians regarding oral health and systemic conditions of the patients.

A study conducted by Nagarakanti S et al in 2013 showed that out of the 267 medical doctors who participated only 10% (69) of them referred their patients to dentists despite all of them being aware of existent relation between oral health and general health. They concluded there is an essential need for proper communication between dentists and physicians for an effective management of diabetes and oral health care. In our study 94% physicians were of the opinion that patients with poorly controlled diabetes should have more frequent dental check up done.

Al-Khabbaz AK et al conducted a study in 2011 on the knowledge of the association between periodontal diseases and diabetes mellitus: contrasting physicians and dentists showed that out of 510 general practitioners, 50% of the participants believed patients with diabetes were at more risk of tooth loss because of periodontal diseases than with individuals without diabetes where in our study 36% of the physicians were of that opinion. Also dentists were more aware of periodontal conditions like alveolar bone resorption, tooth mobility and gingival bleeding than physicians. They concluded that the knowledge of the association of diabetes and periodontal diseases must be enhanced among dental and medical practitioners to effectively manage diabetes and the various periodontal complications associated with it.

A study conducted by Kunzel et al in 2006 showed that 60% of general dentists communicated with the patients with diabetes of the effect of the periodontal therapy on metabolic control. In our study only 42% of the physicians and 62% of the dentists were aware of the two way relationship between diabetes and periodontal health according to our study.

Bader et al in 2003 conducted a study in which they assessed the ability of the general dentists to recognise risk factors of periodontal diseases and the results showed that there is a need to improve their knowledge of the association of diabetes as an indicator of a high risk of periodontal diseases. In our study 42% of the physicians and 62% of the dentists had the knowledge about periodontal complications in Diabetes.

A Periodontist should play an important role in educating general dentists about the knowledge of the association of periodontal diseases and patients having diabetes as they play a significant referral source with patients having advanced periodontal conditions.

Conclusion:
Diabetes is a metabolic condition having a significant effect on the oral health and the association of severe periodontal disease with it. It’s very essential to impart knowledge to doctors regarding the relationship of diabetes and periodontal disease in order to give effective prevention and management of the health care needs of patients with diabetes.

Although the results obtained from our study may not exactly assess the knowledge of all the medical doctors and dentists; due to its small sample size.

Many multcentered surveys need to be conducted in various groups of practitioners in India and worldwide with larger sample size in order to give a clearer picture about the awareness. Various educational programmes need to be conducted to improve the teamwork and enhance the knowledge of the association between medical and dental practitioners.

References: