

## Analysis Of Translation Of Health Information In Relation To Periodontitis

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### ABSTRACT

**Introduction:** Periodontitis in medical terms can be considered as the erosion of the periodontal ligament and surrounding bone. During symptom analysis, diagnosis and prognosis, the inability in comprehending words has an immense effect on the quality of healthcare treatment imparted. These language barriers also sometimes may risk the safety of the patient.

**Aim:** To study the effects and impacts of language barriers in the translation of healthcare information, in relation to Periodontitis.

**Materials and Methods:** A self structured questionnaire was made and circulated among the outpatients of Saveetha dental College and hospitals Chennai. Their responses were recorded, and the data was subjected to statistical analysis using SPSS software, where Chi-Square correlation tests were done to give a result.

**Results:** The results obtained were statistically significant with a p-value of 0.008 ( $p < 0.05$ ). It also showed that 44.23% of the total study population have faced some issues during dental visits due to language barriers and 42.31% of the total study population believed that investment into proper translation technology is a worthy investment.

**Conclusion:-**From our study, it can be concluded that language barriers do exist and have an immense impact on healthcare.

**KEYWORDS:** Language barriers, Health Information, Vernacular Language, Translation, Innovative technique

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### INTRODUCTION

Periodontitis in medical terms can be defined as the gradual pathological loss of the periodontal ligament and surrounding alveolar bone(1). In spite of the growing understanding of the necessity of doctor-patient communication, the issue of language barriers is still not getting enough attention in our population. Owing to the large-scale migration that takes place in India, the chances of healthcare professionals encountering discordance in clinical settings has skyrocketed(2). These pose challenges when aiming to achieve high levels of satisfaction, quality of healthcare and maintaining patient safety. Health disparities such as unequal treatment related to language barriers are associated with unequal access to healthcare and unequal health outcomes. (3)

For instance, a recent study demonstrated that people who do not speak the local language have a disadvantage in terms of access to healthcare services(2,4). Similarly, several studies have also shown that patients who face language barriers, have poorer health outcomes as compared to patients who speak the local language. Language barriers in healthcare lead to a growing misunderstanding between the doctor and the patient, and thus reduce both parties' satisfaction, as well as decrease the quality of healthcare treatment delivery, while hampering patient safety(5). To reduce the gap between patient and the provider, bilingual providers are generally preferred. Language concordance between patient and provider is associated with greater patient satisfaction and interpersonal care, increased compliance and cost-effective utility of emergency care services in case of trauma related issues(6). They also relate to better patient comprehension and physician patient agreement on health behaviour recommendations and improved self-reported well-being and functioning for patients with acute health issues.

In the absence of bilingual clinicians, professionally trained interpreters can provide high-quality culturally competent language services, resulting in improved patient understanding, greater patient satisfaction and better quality as measured by receipt of preventive care and the number of prescriptions written and filled. However, it is not economically feasible for individual hospitals or clinics to provide professional interpreters for potentially dozens of languages, as this would increase the overhead treatment cost. Recent developments in communication technologies however can be harnessed to use existing bilingual providers and interpreters more efficiently(7). Our team has extensive knowledge and research experience that has translated into high quality publications. (8),(9),(10),(11),(12),(13),(14),(15),(16),(17),(18),(19),(20),(21),(22),(23),(24),(25),(26),(27)

This research aims to properly analyse the challenges faced by patients and providers due to language barriers.

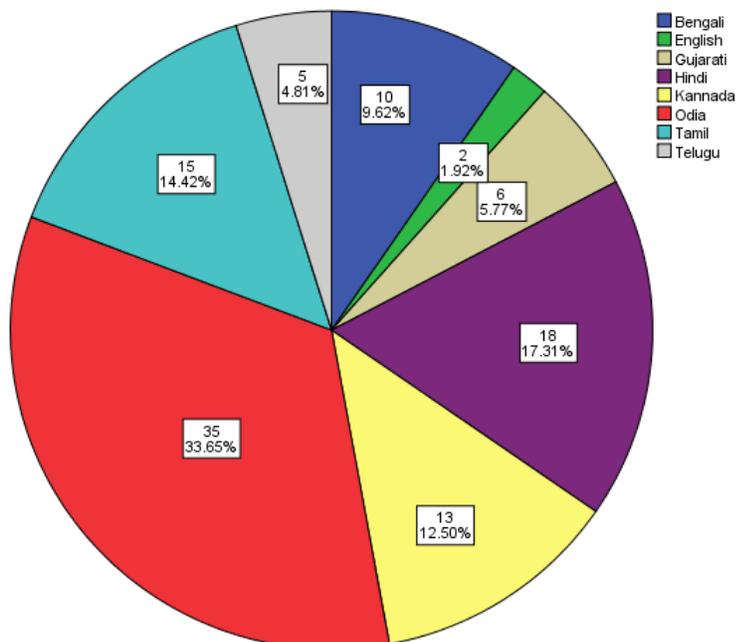
## MATERIALS AND METHODS

The sample size chosen for this study was taken to be 104. Self-structured questionnaire was prepared on Google forms and circulated randomly through whatsapp and e-mail among the outpatients at Saveetha Dental College and Hospitals, Chennai. The questionnaire consisted of a series of questions including the basic demographic details like Age, Gender and Educational Qualification. The data was collected based on the responses on the questionnaire over a period of 2 days. This collected data was then subjected to statistical analysis by using the IBM Statistical Package for Social Studies (SPSS version 23) Software. Chi-square correlation tests were also conducted.

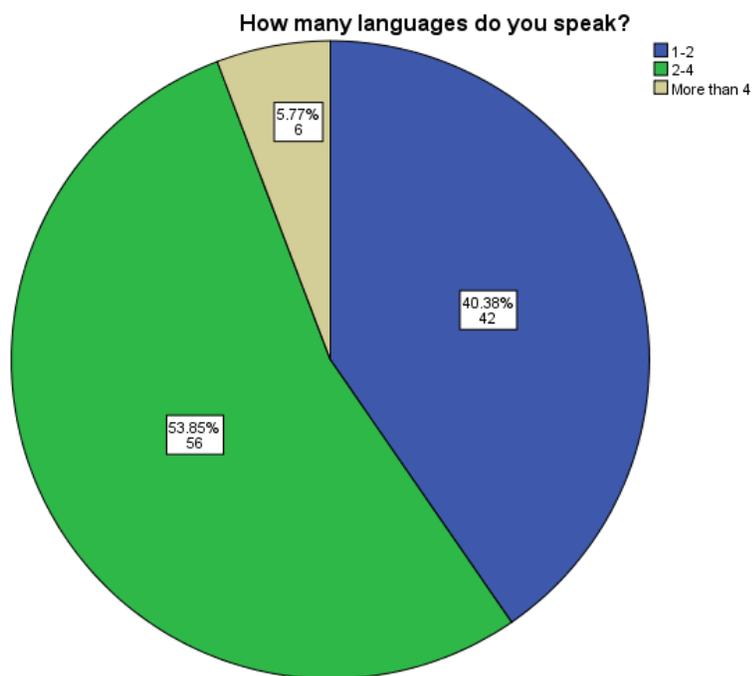
The other questions were as follows

- What is your mother tongue?
- How many languages do you speak?
- How often do you visit a dentist?
- Do you face trouble during dental visits owing to language barriers?
- Are you comfortable using online translation apps like google translate for language translation?
- According to you, is investment in language translation technology a worthy investment?
- Should vernacular language be introduced as a compulsory course for healthcare professionals?

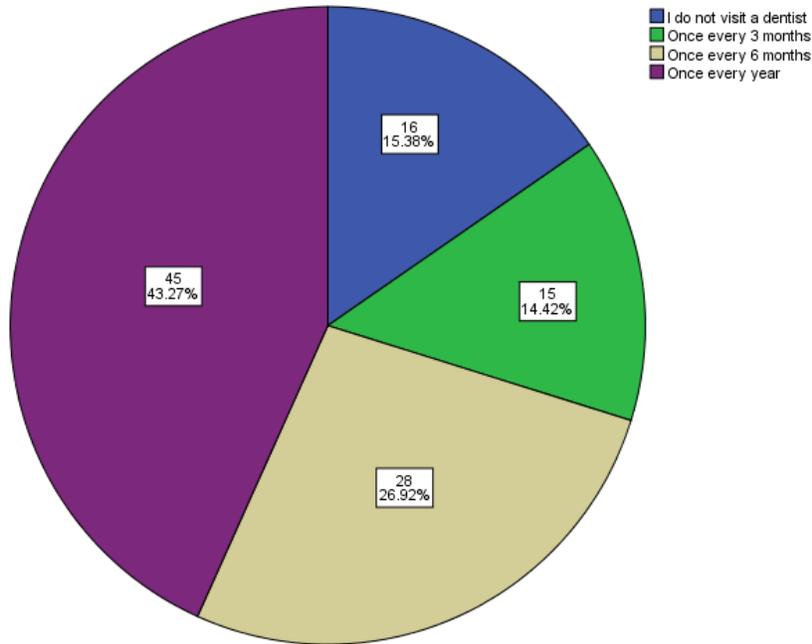
## RESULTS



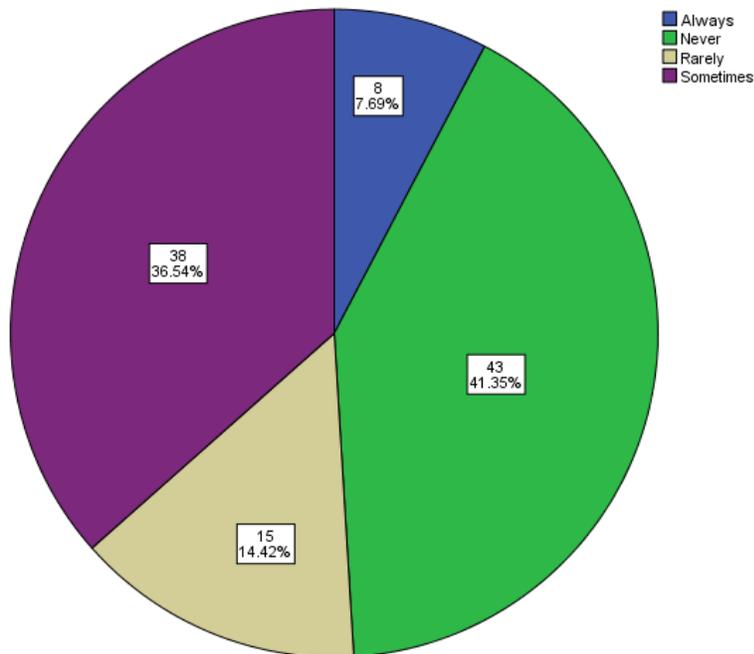
**Figure1:** Pie chart showing the percentage distribution of the mother tongue of the study population. 33.65% (Red) are Odia, 12.5% (Yellow) are Kannada, 17.31% (Purple) are Hindi, 5.77% (Beige) are Gujarati, 1.92% (Green) are English, 9.62% (Blue) are Bengali, 4.81% (Grey) are Telugu, 14.42% (Sky blue) are Tamil. Majority of the participants had Odia as their mother tongue.



**Figure 2:** Pie chart showing the percentage distribution of the number of languages spoken by the study population. 53.85% (Green) of the people spoke two languages, 40.38% (Blue) of the people spoke one language, 5.77% (Beige) of the people spoke more than four languages. Majority of the participants spoke two to four languages.

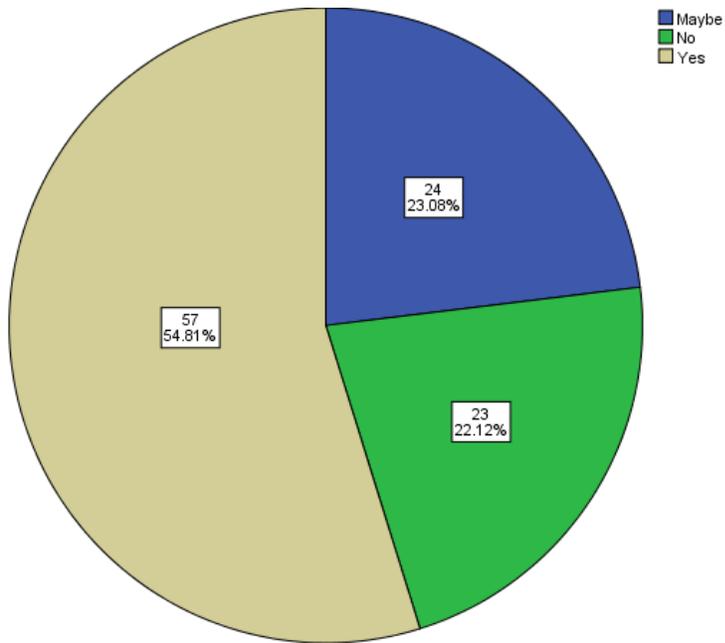


**Figure 3:** Pie chart showing percentage distribution of the frequency of dental visit. 43.27% (Violet) of the people visited the dentist once every year, 26.92% (Beige) of the people visited the dentist once every six months, 14.42% (Green) of the people visited a dentist once every three months, 15.38% (Blue) of the people did not visit a dentist. Majority of the participants visit the dentist once every year.

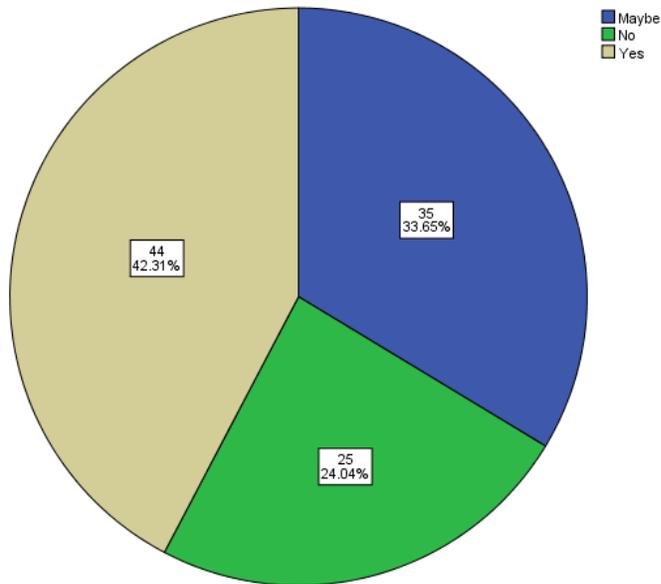


**Figure 4:** Pie chart showing percentage distribution of trouble faced during dental visits owing to language barriers. 41.35% (Green) of the people never faced issues due to language barriers, 36.54% (Violet) of the people sometimes faced issues due to language barriers, 14.42% (Beige) of the people

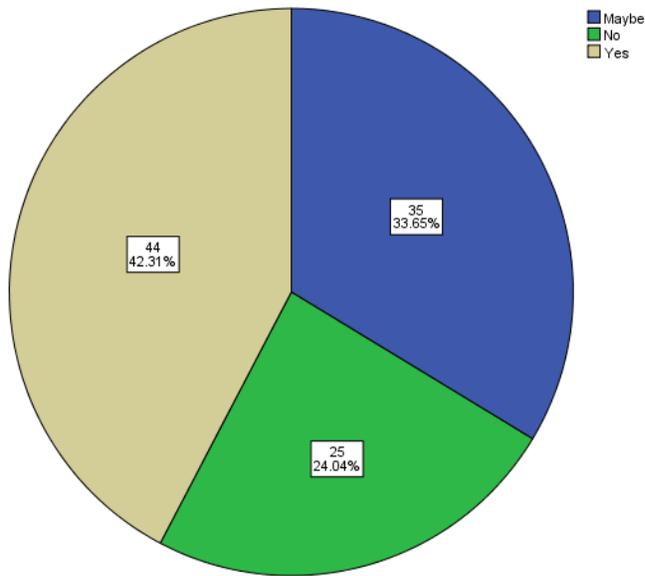
rarely faced issues due to language barriers, and 7.69% (Blue) of the people always faced issues due to language barriers. Majority of the participants never faced issues during dental visits due to language barrier.



**Figure 5:** Pie chart showing percentage distribution of whether or not people were comfortable using apps like Google translate. 54.81% (Beige) of the people were comfortable using Google translate, 23.08% (Blue) of the people were maybe comfortable using Google translate, 22.12% (Green) of the people were not comfortable using Google translate. Majority of the participants were comfortable using google translate.

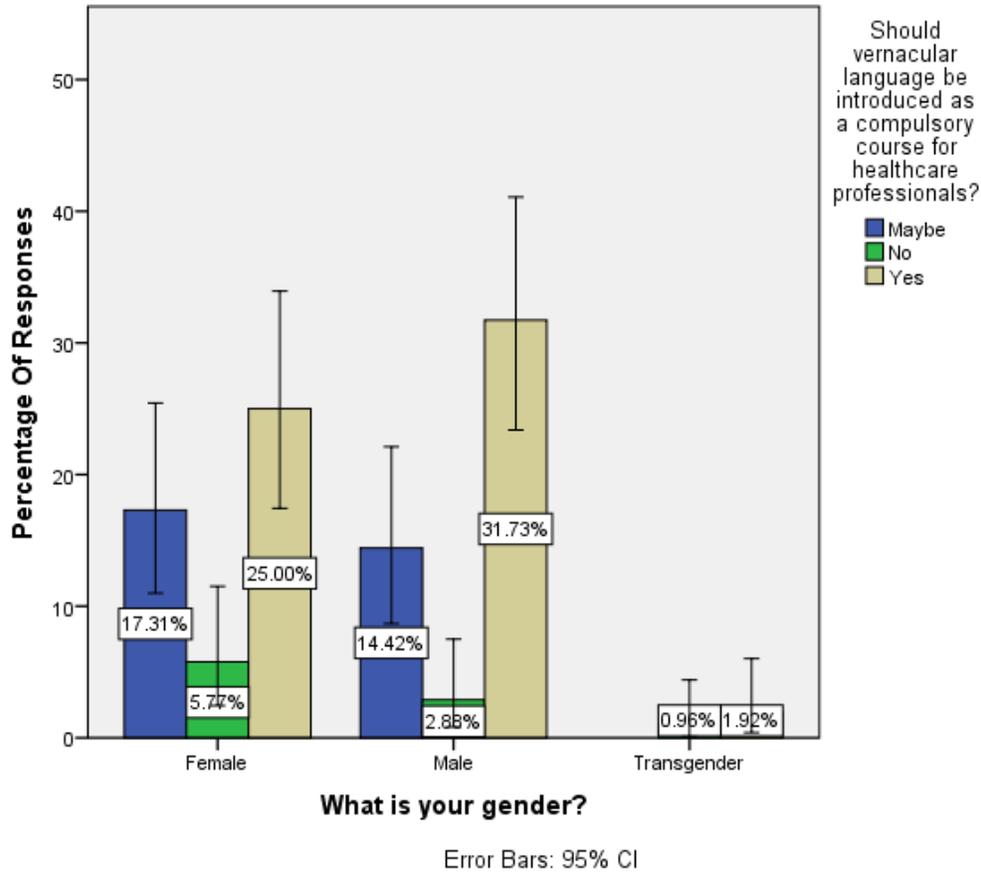


**Figure 6:** Pie chart showing the percentage distribution of people's view on whether or not investment into translation technology is a worthy investment. 42.31% (Beige) of the people agreed that investment into translation technologies is worthy, 33.65% (Blue) of the people thought that maybe the investment was worthy, 24.04% (Green) of the people thought that the investment was not worthy. Majority of the participants agree that investment in translation technologies was worthy.

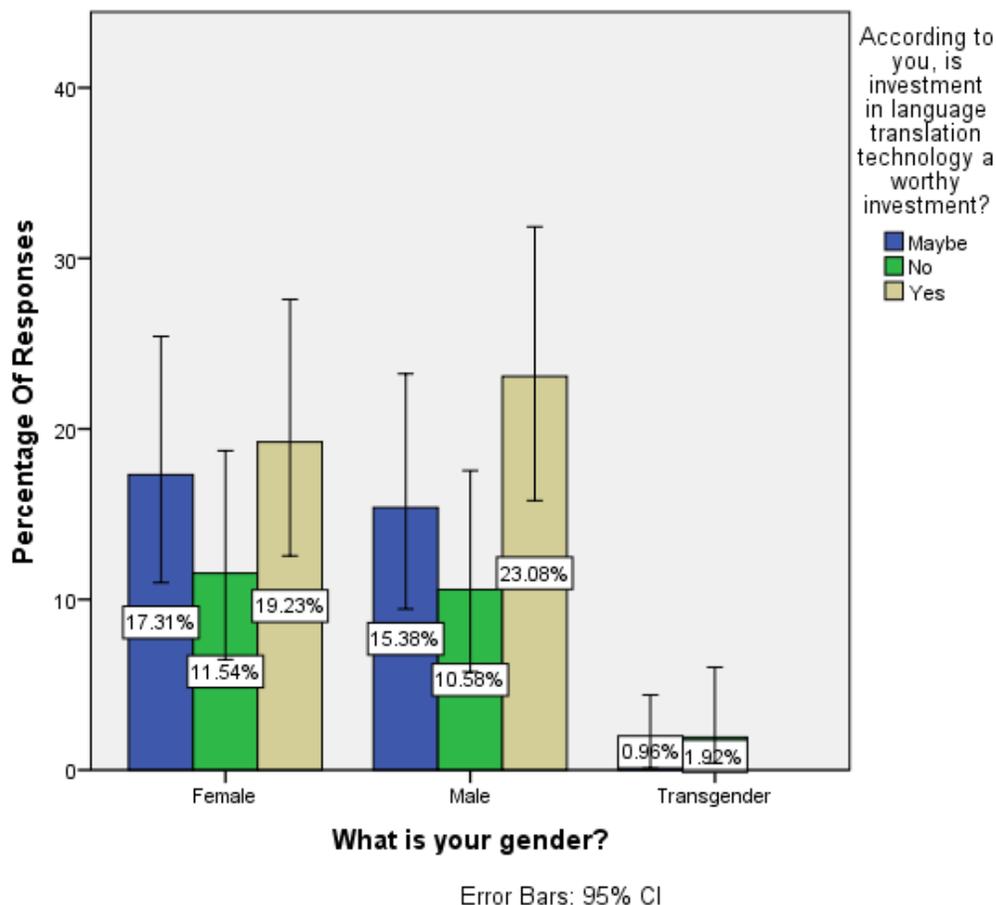


**Figure 7:** Pie chart showing people's view on whether or not vernacular language should be introduced as a compulsory course for healthcare professionals. 42.31% (Beige) of the people agreed that vernacular language should be made a compulsory course, 33.65% (Blue) of the people said that maybe vernacular language should be made a compulsory course, 24.04% (Green) of the people said that

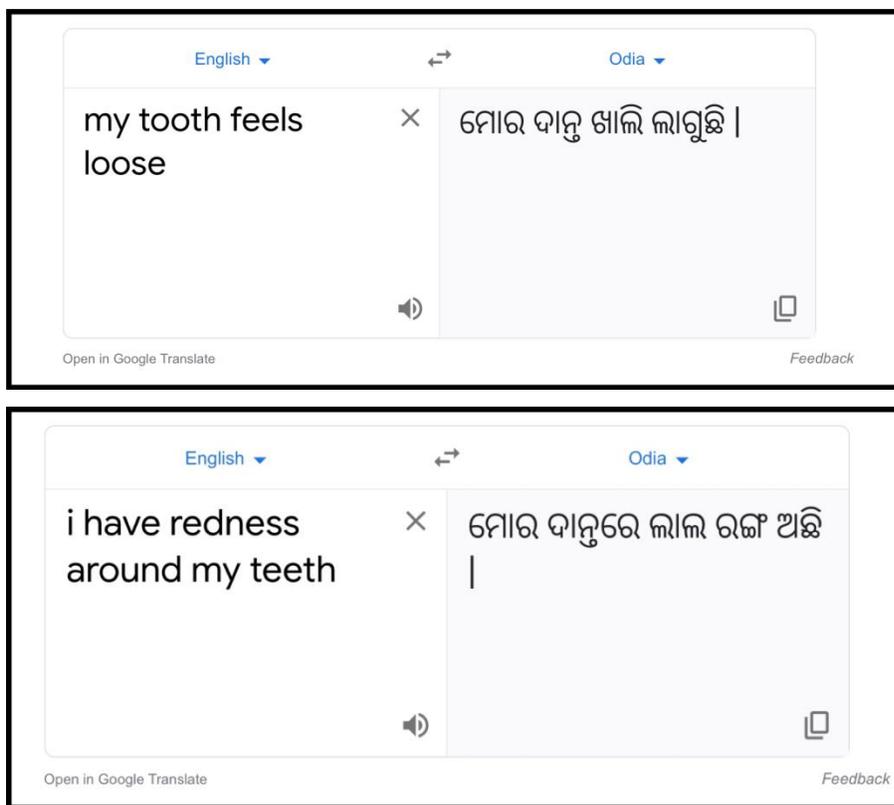
vernacular language should not be made a compulsory course. Majority of the participants agreed that vernacular language should be made a compulsory course for healthcare professionals.



**Figure 8:** Bar chart showing association between gender and whether or not vernacular language should be introduced as a compulsory course for healthcare professionals. The X axis represents gender the Y axis presents the percentage of responses. Blue represents Maybe (17.31% Female, 14.42% Male, ), Green represents No (5.77% Female, 2.88% Male, 0.96% Transgender), Beige represents Yes (25.00% Female, 31.73% Males, 1.92% Transgender). P value is 0.046 ( $p < 0.05$ ) which is statistically significant, and concludes that the majority of Females, Males and Transgenders believe that vernacular language should be introduced as a compulsory course for healthcare professionals.



**Figure 9:** Bar graph showing association between gender and whether or not people are comfortable using online translation apps like Google translate. X axis represents gender and Y axis represents the percentage of responses. Blue represents Maybe (17.31% Female, 15.38% Male, 0.96% Transgender), Green represents No (11.54% Female, 10.58% Male, 0.96% Transgender), Beige represents Yes (19.23% Female, 23.08% Male). P value is 0.015 ( $p < 0.05$ ) which is statistically significant and concludes that the majority of Females, Males and Transgenders believe that investment in language technology is a worthy investment.



**Figure 10/11:** Images showing errors in Google translate, when trying to translate symptoms of periodontitis from English to Odia.

9.62% of the population spoke Bengali, 1.92% of the population spoke English, 5.77% of the population spoke Gujarati, 17.31% of the population spoke Hindi, 12.5% of the population spoke Kannada, 33.65% of the population spoke Oriya, 14.42% of the population spoke Tamil and 4.81% of the population spoke Telugu (Figure 1). 40.38% of the population spoke only 1 language, 53.85% of the population spoke 2-4 languages, 5.77% of the population spoke more than 4 languages (Figure 2). 15.38% of the population did not visit a dentist, 14.42% of the population visited a dentist every 3 months, 26.92% of the population visited a dentist every 6 months, 43.27% of the population visited a dentist every year (Figure 3). 7.69% of the population always faced trouble during dental visits owing to language barriers, 36.54% of the population sometimes faced trouble, 14.42% of the population rarely felt trouble and 41.35% of the population never faced trouble during dental visits owing to language barriers (Figure 4). 54.81% of the population was comfortable using online translation apps like Google translate, 22.12% of the population was not comfortable using Google translate, 23.08% of the population was not sure (Figure 5). 42.31% of the population agreed that investment into language translation technology is a

worthy investment, 24.04% of the population denied that language translation technology is a worthy investment, 33.65% of the population was not sure (Figure 6). 42.31% of the total study population agreed that vernacular language should be introduced as a compulsory subject, 24.04% of the population denied that vernacular language should be introduced as a compulsory course for healthcare professionals, 33.65% of the population was not sure (Figure 7). 32.69% of the males were comfortable using online translation apps like Google translate, 22.12% of the females were comfortable using apps like Google translate (Figure 8). 31.73% of the male population agreed that vernacular language should be introduced as a compulsory course for healthcare professionals, 25% of the female population agreed that vernacular language should be introduced as a compulsory course for healthcare professionals (Figure 9). A key symptom of periodontitis 'increased tooth mobility' when translated to Odia, instead of coming out as "my tooth feels loose" came out as "My tooth feels empty." (Figure 10). Another key symptom of periodontitis 'gingival inflammation' when translated to Odia, instead of coming out as "I have redness around my teeth" came out as "My teeth are red." (Figure 11).

## **DISCUSSIONS**

In the present study, 54.81% of the total study population was comfortable using apps like Google Translate to overcome their language barriers. In a previous study, conducted by Wade RG, it was found that 49.7% of his study population was comfortable with the idea of adopting Google translate to overcome language barriers. This disparity between percentages can be explained because there is evidence where even the best of the translation apps lacked privacy, or were unable to properly translate symptoms of the patient. (28)

In the present study, 42.31% of the population felt that vernacular languages should be introduced as a compulsory course for healthcare professionals. In a previous study, conducted by Butterfield PG, he found that 38% of their study population wanted vernacular language courses to be made compulsory for healthcare professionals. The views shared on this were similar, as the concept of having bilingual or multilingual providers has become more and more prevalent in recent times. (29)

In the present study, it was found that 7.69% of the study population always faced issues owing to language barriers during dental visits. In a previous study conducted by Butterfield PG, Al Shamsi H, they found that 56% of their population had faced issues due to language barriers during dental visits. This disparity can be explained by the fact that the previous study was conducted in a rural setting where the study population were not aware of any of the popularly used languages and only spoke the vernacular-

most language (29,30) .The results of the study were not generalizable as the sample size was very small. The results can be made more generalized by increasing the sample size.

## **CONCLUSION**

From the conducted survey, it was concluded that language barriers are deeply rooted in the field of healthcare and have an immense impact on the quality of services that are imparted to the public, and ultimately affect the satisfaction and in some cases, the security of an individual.

## **AUTHORS CONTRIBUTION**

**Chandan Panigrahi:** Literature search, data collection analysis, manuscript drafting.

**Dr. Palati Sinduja:** Aided in conception of the topic, has participated in the study design, statistical analysis and has supervised in preparation and final corrections of the manuscript.

**Dr. Lakshmi.T.A:** Data verification, manuscript drafting, preparation of the manuscript.

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## **CONFLICT OF INTEREST**

The authors reported the conflict of interest while performing this study to be nil.

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