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# Oral Hygiene Practices Followed by Physically and Mentally Challenged People

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**Abstract:** Physically and mentally challenged individuals are a unique set of patient population whose health demands and oral care demands are considerably different from the normal patient population. Therefore, this study aimed to assess the oral hygiene practices followed by physically and mentally challenged people in Madurai district. The study was carried out in a homogeneous population of 100 physically and mentally challenged participants. The self structured questionnaire was distributed among the targeted population. The data were collected and presented in the form of pie charts.The population mostly consisted of mentally challenged people who were even unaware of the basic hygiene to be maintained whereas the rest of the population were visually and hearing impaired persons and handicaps. The most surprising result of the study is that the population was aware of their impact of disability on oral health.The result establishes that there exists a better awareness and knowledge among caretakers on oral hygiene practices that should be followed on such differently abled persons.Creating awareness and providing knowledge on oral hygiene practices would provide better oral health and thus avoiding complications in systemic health.

**Keywords:** Oral hygiene practices; Impact of disability on oral health; awareness; knowledge; educational background; awareness programs and teaching.

## INTRODUCTION

Oral hygiene is the practice of keeping one's mouth clean and free of disease and other complications. The oral hygiene practices include regular brushing of teeth and cleaning between the teeth which us to be carried out regularly. This constant practice of maintenance of oral hygiene will provide prevention against periodontal diseases and bad breath (Darby and Walsh, 2009). Maintaining oral hygiene and a proper oral health is not only an essential criteria to maintain your looks and personality,it is also a key to feel good,eat and speak properly without any consciousness , that too always the anteriors are chosen to satisfy esthetics (Altun *et al.*, 2010; Ashok and Suvitha, 2016; Ariga *et al.*, 2018).The oral hygiene practices and oral health prevailing in an individual has influence over the systemic health of which every individual was aware of and expected to maintain in a proper state (Institute of Medicine, Board on Health Sciences Policy and Committee on Advancing Pain Research, Care, and Education, 2011). But oral hygiene is often taken for granted (Supriya *et al.*, 2019). The fact that one should be aware of is that mouth is the window of general systemic health of an individual. The main goal in maintenance of proper oral health with a proper oral hygiene practices comprise preventing plaque formation which leads to various periodontal diseases like periodontitis, gingivitis , bleeding gums and other periodontal complications, also to avoid halitosis (*PharmacyLibrary*, no date; Ganapathy, Kannan and Venugopalan, 2017; Jyothi *et al.*, 2017; Kannan and Venugopalan, 2018). In our study we take differently abled people into account who are considered as the substantial section of the general population. These people should also earn the same opportunities as those of the common population to maintain oral hygiene practices. But regularly, the most common unmet needs for the differently abled people covers the improper or inappropriate dental treatment and advice to maintain a good oral hygiene or health (Kaur *et al.*, 2013). The oral health observed in differently abled people is determined by diet and certain physical limitations that prevail in physically challenged people leading to back of proper cleaning habits and existing bad oral health (Duraisamy *et al.*, 2019).The proper maintenance of oral hygiene will prevent the alarming

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level of microbial agents in the oral cavity or mouth (Selvan and Ganapathy, 2016; Vijayalakshmi and Ganapathy, 2016). The more accumulation of debris and plaque leads to marginal discrepancies (Ganapathy, 2016; Jain, Ranganathan and Ganapathy, 2017). The complexity of maintaining oral hygiene will increase with physically challenged people and it comes to mentally challenged people (Zhou, Wong and McGrath, 2019). The intellectual property, motor and sensory disability existing in those people will contribute to poor oral health of mentally challenged people (Reddy *et al.*, 2013; Al-Allaq *et al.*, 2015).

In previous studies which were done with the population of physically and mentally challenged people, it is evident that mentally challenged people had poor oral health due to inaccurate oral hygiene practices followed (Zhou, Wong and McGrath, 2019). As a result of mental disability, the oral health also has the equal complexity and the near critical need to maintain better oral hygiene practices but it is the field where not much attention is provided (*PharmacyLibrary*, no date). In children, basically it is a difficult task to maintain oral hygiene and also when it is to be met with differently abled people, it becomes a greater challenge. These people lack basic manual skills and so it becomes the responsibility of the caretaker to develop and maintain a good oral health in these individuals (Nunn and Murray, 1987). The limitations of these studies mostly include the factor of small population, the caretakers either be parents or others; are also unaware of good oral health, which if not monitored properly will add complexities to physical and mental disability. The important limitation is inadequate facility and funds that takes care of oral hygiene practices followed and prevailing oral health.

However, there are natural therapeutics to improve oral health, maintenance of oral hygiene practices in everyday life becomes the necessity (Subasree, Murthykumar and Dhanraj, 2016). Thus if better oral hygiene practices are undertaken, better oral health is evolved which then gives rise to good systemic health. As dental professionals our responsibilities is to make differently abled people and also their guardians or parents aware of the importance of maintaining good oral health and oral hygiene practices so that complications in systemic health are reduced or prevented.Our team has rich experience in research and we have collaborated with numerous authors over various topics in the past decade (Deogade, Gupta and Ariga, 2018; Ezhilarasan, 2018; Ezhilarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; J *et al.*, 2018; Menon *et al.*, 2018; Prabakar *et al.*, 2018; Rajeshkumar *et al.*, 2018, 2019; Vishnu Prasad *et al.*, 2018; Wahab *et al.*, 2018; Dua *et al.*, 2019; Duraisamy *et al.*, 2019; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Gheena and Ezhilarasan, 2019; Malli Sureshbabu *et al.*, 2019; Mehta *et al.*, 2019; Panchal, Jeevanandan and Subramanian, 2019; Rajendran *et al.*, 2019; Ramakrishnan, Dhanalakshmi and Subramanian, 2019; Sharma *et al.*, 2019; Varghese, Ramesh and Veeraiyan, 2019; Gomathi *et al.*, 2020; Samuel, Acharya and Rao, 2020)

The aim of the study is to assess oral hygiene practices followed by physically and mentally challenged people in Madurai district.

## MATERIALS AND METHODS

The present study is a prospective observational study which is economical, easy to create, has wide reach and gathers large data with quick interpretation. This study is carried out in a homogeneous population involving response bias and survey fatigue. The study is approved by the scientific review board. The sample size was about 100 physically and mentally challenged participants. This study includes random sampling and the sampling bias is reduced by minimizing errors in questions and by avoiding leading questions.

The current survey contains a self structured questionnaire of validated 15 questions. The required data was collected and the output variables like demographic information, awareness on oral health and oral hygiene practices were represented as pie charts.Descriptive statistics like pie charts are presented with gender, height, weight,etc., as independent variables and education or awareness of parents, responsibility of caretaker and influence of disability on oral health as dependent variables.

**RESULTS AND DISCUSSION**

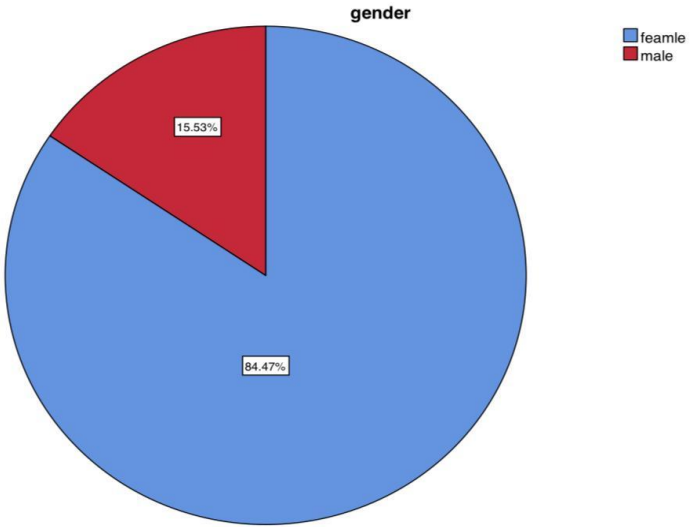


**Fig.1: Pie chart represents the percentage distribution of gender of the participants.Blue colour represents female and red presents male in which 84.47% were female while 15.53% were male.**

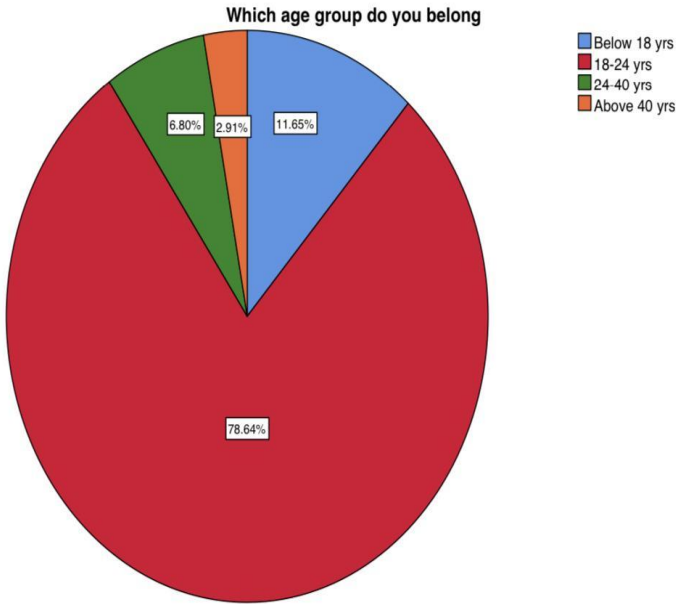


**Fig.2: Pie chart shows the percentage distribution of various age groups of the participants. 11.65% of the participants were below 18 yrs of age which is represented in blue,71.64% of the population were between 18 and 24 years of age which is represented in red, 6.80% belonged to the age group of 24-40 years which is represented in green and 2.91% were below 40 years which is represented in orange.**

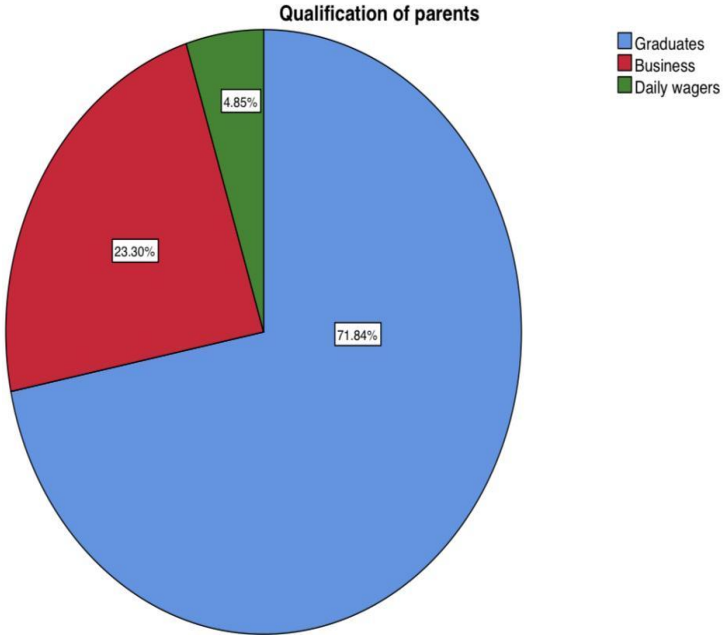


**Fig.3: shows the percentage distribution of qualification of parents of the participants. 71.8% of parents of the population were graduates which is represented in blue, 23.3% were business persons represented in red and 4.85% were daily wagers represented in green colour.**

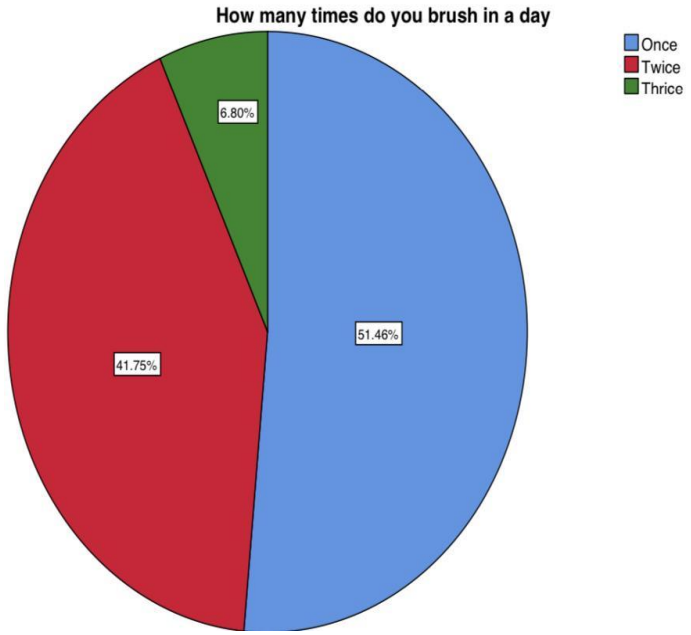


**Fig.4: shows the percentage distribution of participants on the frequency of their brushing in a day. 51.5% of them brushes once in a day represented in blue, 41.7% of the population brushes twice and is represented in red whereas 6.8% of the population brushes thrice in a day, represented in green colour.**

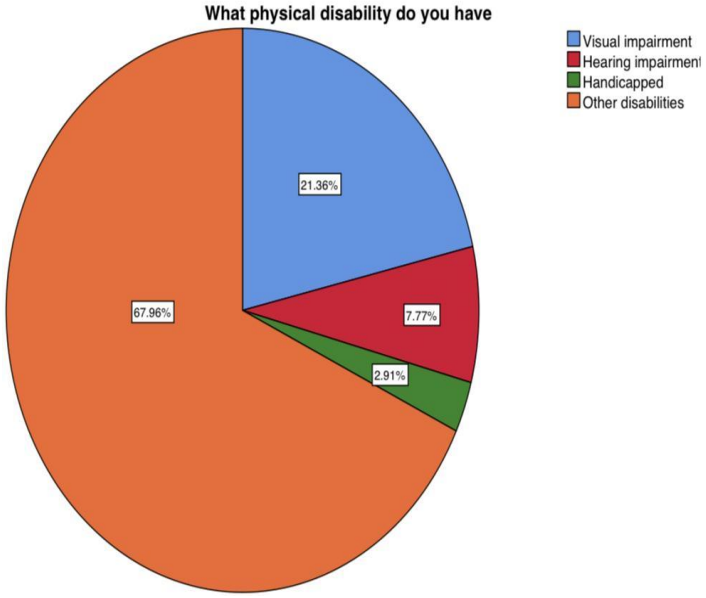


**Fig.5: shows the percentage distribution of participants with various disabilities. 21.4%of the population were visually impaired which is represented in blue,7.8% had hearing impairment and is represented in red while 2.9% were handicapped were represented in green and 68% had other disabilities which is mental retardation and is represented in orange.**

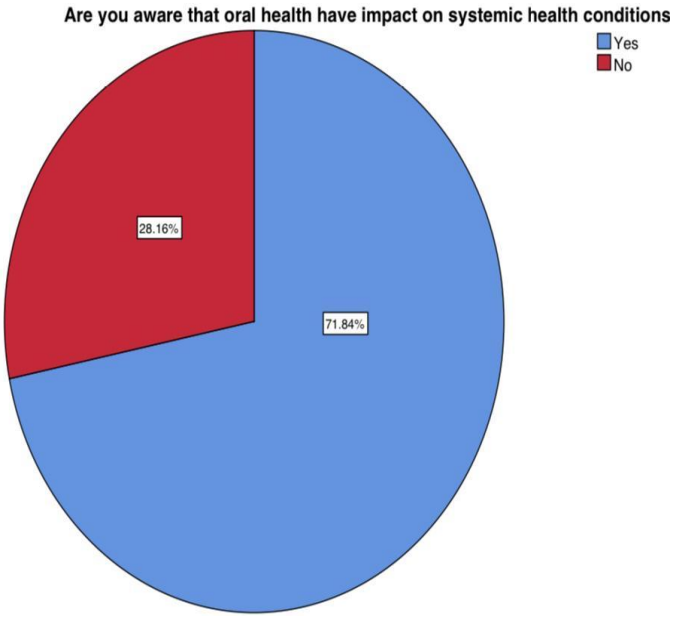


**Fig.6: shows the percentage distribution of responses for awareness on oral health has an impact on systemic health. 71.8% responded as yes which is represented by blue colour while 28.2% of the population responded no and is represented in red.**

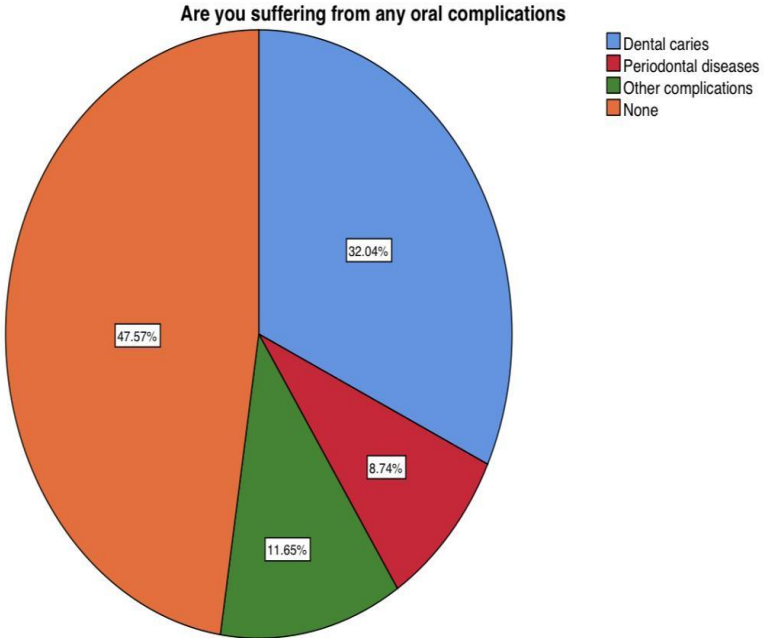


**Fig.7: shows the percentage distribution of participants suffering from different oral complications. 47.6% of the participants had no dental complications which is represented in orange while 32% had dental caries which is represented in blue and 11.7% of the participants were suffering from other complications and is represented in green colour whereas 9.7% had periodontal disease which is represented by red colour.**

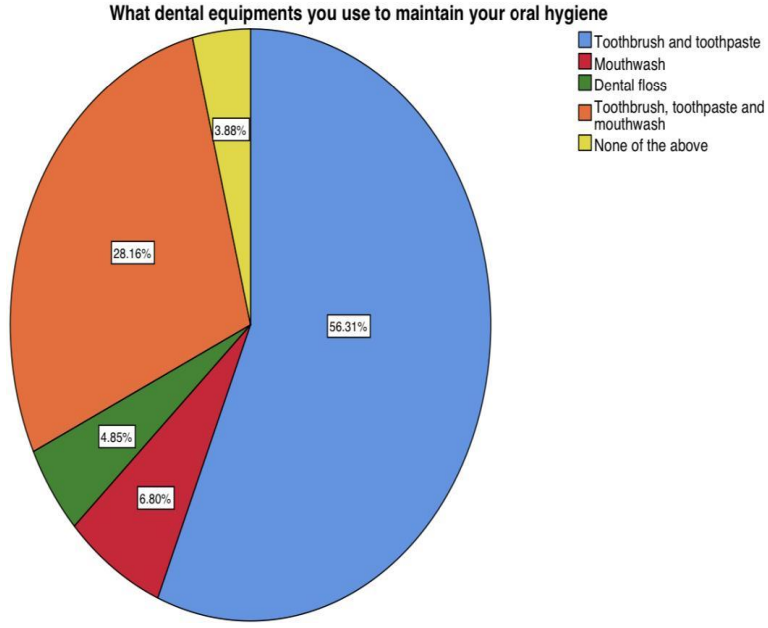


**Fig.8: shows the percentage distribution of participants who use various dental equipment to maintain oral hygiene. 56.3% uses only toothbrush and toothpaste,represented in blue, 6.80% uses mouthwash which is represented in red while 28.1% all the three of the above represented in orange whereas 3.88% of the participants uses none of the equipment and is represented in yellow and 4.85% of the population uses dental floss which is represented in green.**

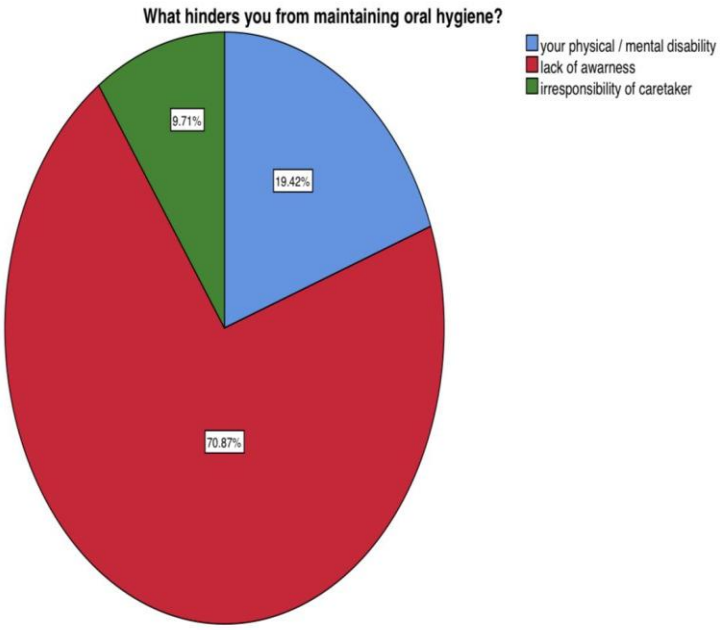


**Fig.9: shows the percentage distribution of participants who gave reasons for hindrance of oral hygiene practice. 19.42% of the participants attributed it to physical/ Mental disability, represented in blue while 70.87% of responses were lack of awareness which is represented in red and 9.71% of responses were irresponsibility of caretaker which is represented in green.**

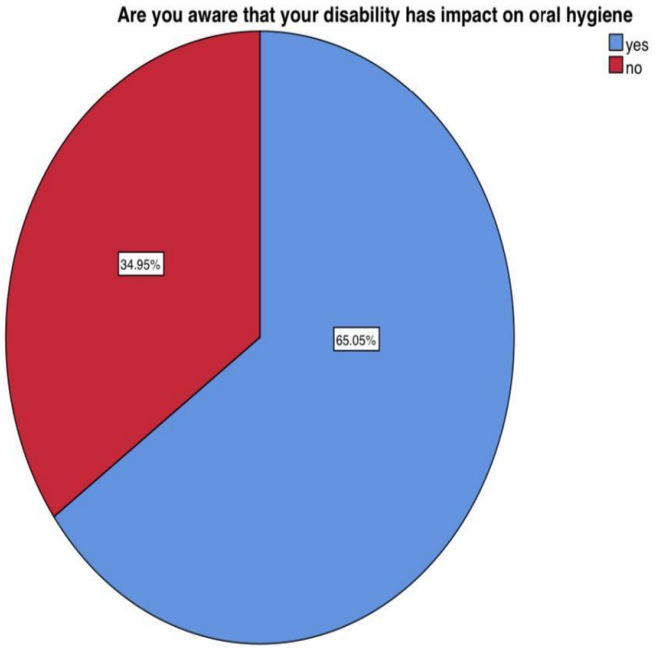


**Fig.10: shows the percentage distribution of participants on awareness that disability has impact on oral hygiene. 65.05% of the population responded yes which is represented in blue whereas 34.95% of the participants responded no and is represented in red.**

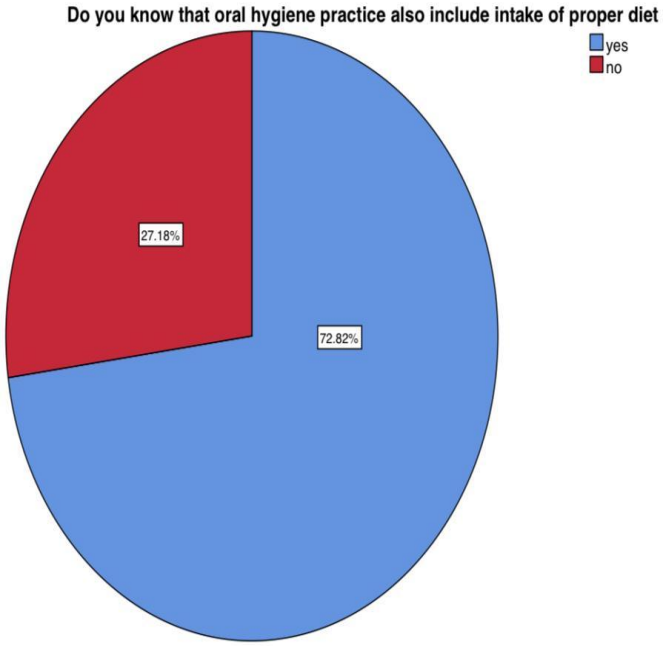


**Fig.11: shows the percentage distribution of participants who were aware that proper diet is also an oral hygiene practice. 72.82% of the participants responded yes which is represented by blue while 27.18% of them responded as no and is represented in red.**

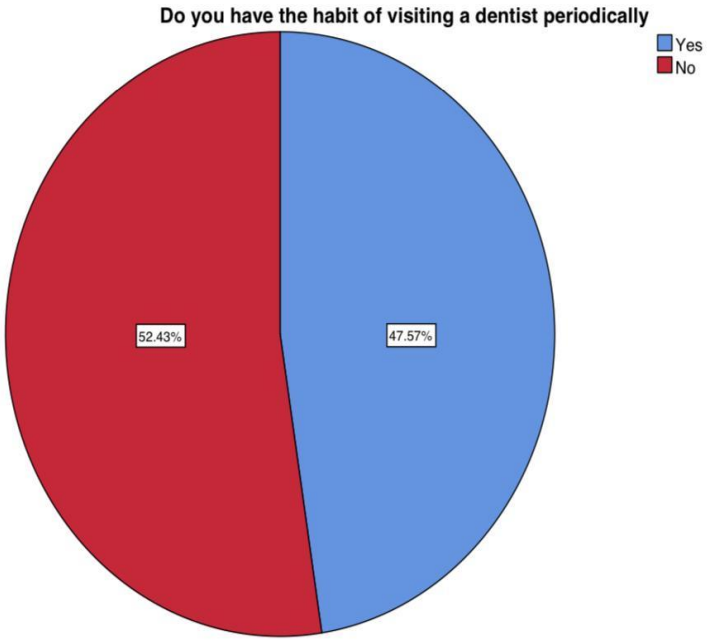


**Fig.12: shows the percentage distribution of participants who visit dentist periodically and those who don't. 47.57% of participants visit dentists periodically and is represented by blue whereas 52.43% of the participants lack the habit of visiting dentist periodically which is represented in red.**

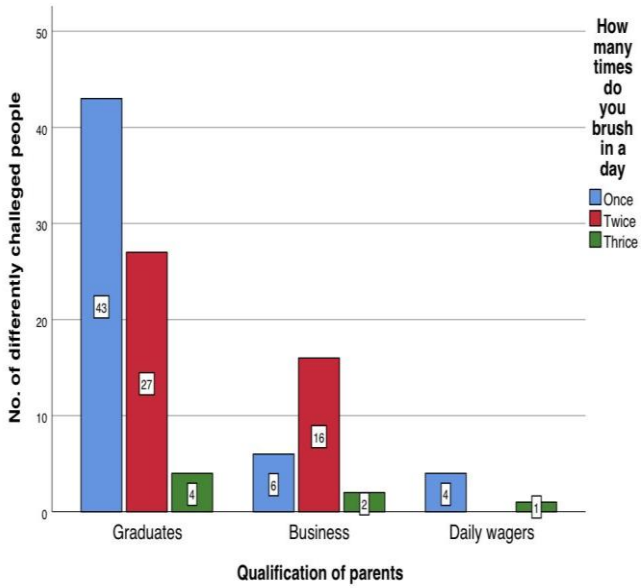


**Fig.13: Bar chart showing association between the qualification of parents (X axis) and responses for frequency of brushing (Y axis) of differently challenged people. Blue colour denotes once, Red colour denotes twice and green denotes thrice. 43% of graduates and 4% of daily wagers responded to the frequency of brushing as once and a 16% of business people responded to the frequency of brushing as twice. Majority of parents responded to the frequency of brushing as once and on analysis it was statistically evident from the graph above. Chi square value= 12.41, p= 0.01 (p <0.05), statistically significant. This proves that people with a high literacy rate are following good oral hygiene practices for their physically and/ or mentally challenged children.**

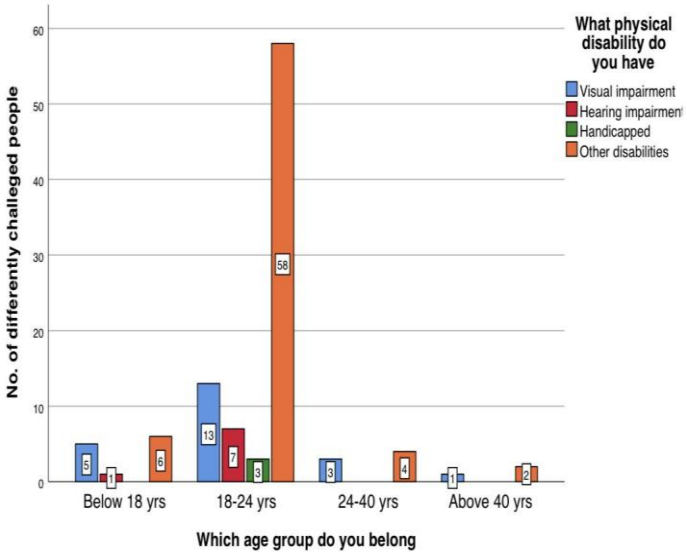


**Fig.14: Bar chart showing association between age groups (X axis) and physical disability possessed by differently challenged people (Y axis). Blue denotes visual impairment, red denotes hearing impairment, green denotes handicapped and orange denotes other disabilities. 58% of participants belonging to 18-24 years of age, 6% of participants below 18 years, 4% of participants belong to 24-40 years of age group and 2% of participants above 40 years responded that they possess other disabilities like mental retardation. Chi square value=7.62, p= 0.5 (p>0.05, statistically not significant) Majority of participants responded that they possess other disabilities like mental retardation but on analysis there was no statistical significance between age group and disability they possess.**

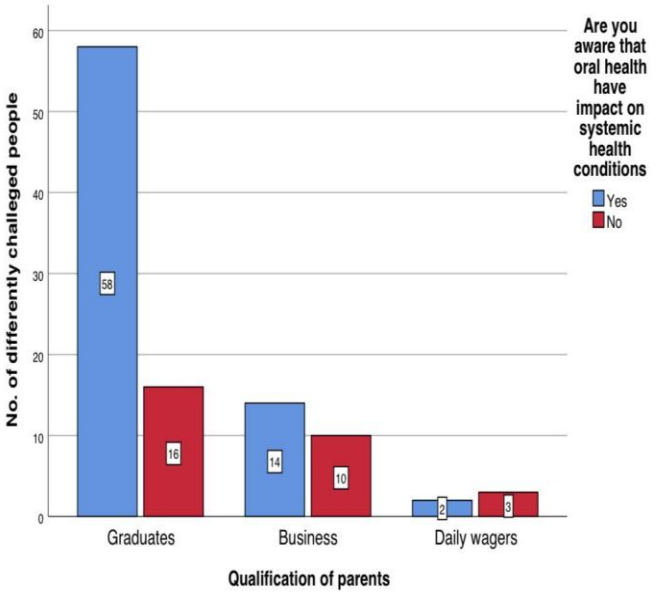


**Fig.15: Bar chart showing association between the qualification of parents (X axis) and awareness on impact of oral health on systemic health (Y axis) of differently challenged people. Blue colour denotes, yes, Red colour denotes no. 58% of graduates and 14% of business people responded were aware, of the impact of oral health on systemic health while 3% of daily wagers were unaware. Chi square, value= 6.23, p= 0.04 (p <0.05), statistically significant. Majority of parents were aware of the impact of oral health on systemic health and on analysis it was statistically evident from the graph above.**

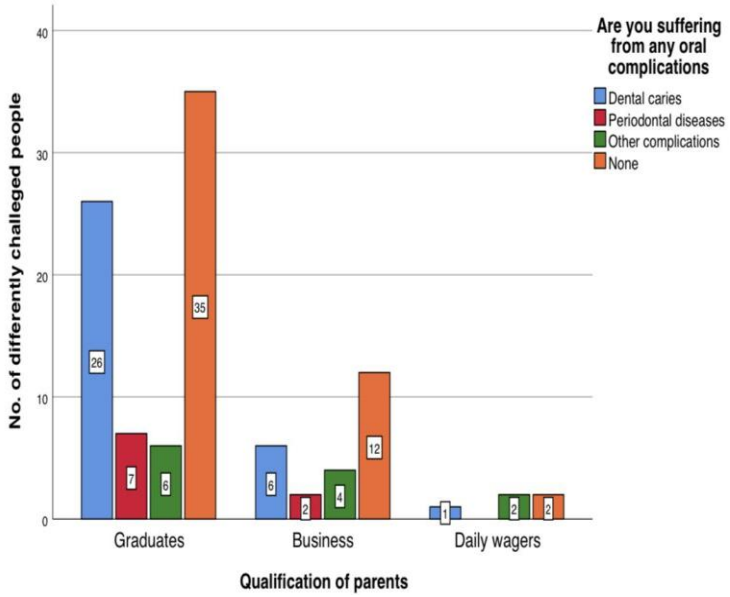


**Fig.16: Bar chart showing association between the qualification of parents (X axis) and oral complications (Y axis) of differently challenged people. Blue colour denotes dental caries, Red colour denotes periodontal diseases, green denotes other complications and orange denotes none. 35% of graduates, 14% of business people and 2% of daily wagers responded that they were free of oral complications.. Chi square value= 6.1, p= 0.4 (p>0.05), statistically not significant. Majority of the parents responded that the differently challenged people were free of oral complications but on analysis there was no statistical significance between qualification of parents and oral complication of the participants**

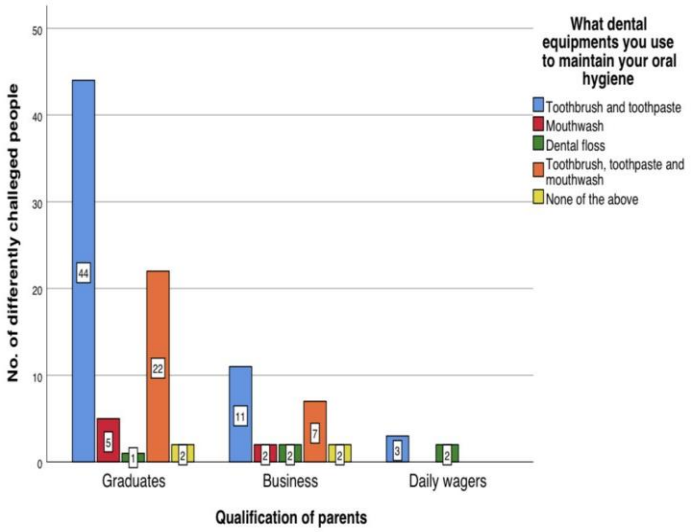


**Fig.17: Bar chart showing association between the qualification of parents (X axis) and dental equipment used (Y axis) by differently challenged people. Blue colour denotes toothbrush and toothpaste, Red colour denotes mouthwash, green denotes dental floss, orange denotes toothbrush, toothpaste and mouthwash and yellow denotes none. 44% of graduates, 11% of business people and 3% of daily wagers responded that they use toothbrush and toothpaste for maintaining oral hygiene. Chi square value= 19.3, p= 0.013 (p<0.05), statistically significant. Majority of the parents responded that the dental equipment used by differently challenged people was only toothbrush and toothpaste and on analysis was statistically significant.**

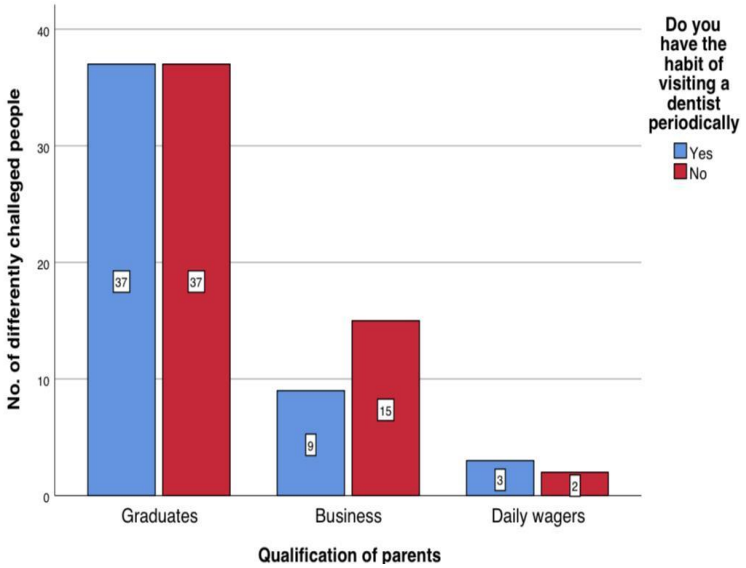


**Fig.18: Bar chart showing association between the qualification of parents (X axis) and the habit of visiting dentists periodically (Y axis) by differently challenged people. Blue colour denotes yes, Red colour denotes no. 37% of graduates responded that they visit dentists periodically and also an equal amount of graduates responded that they don't visit dentists periodically whereas 15% of business people visit dentists periodically and 3% of daily wagers lack the habit of periodically visiting a dentist.. Chi square value= 1.46, p= 0.48 (p>0.05), statistically not significant. Majority of the parents responded that they don't visit a dentist periodically, analysis shows there was no statistically significant association between qualification of parents and the habit of visiting dentists periodically.**

In the present study, it is observed that 84.47% of the total population was female and 15.53% were male (Fig.1). About 78.64% of the population were between 18 and 24 years of age, 11.7% belonged to below 18 years of age and 6.80% belonged to the age group of 24-40 years and only 2.91% were below 40 years (Fig.2). Nearly 71.8% of parents of the disabled persons of the population were graduates, 23.3% were business and 4.85% were daily wagers (Fig.3). When the question was asked about the frequency of brushing, 51.5% of them brushes once in a day, 41.7% of the population brushes twice whereas 6.8% of the population brushes thrice in a day (Fig.4). When their disabilities were enquired 68% of individuals were mentally affected, 21.4%of the population were visually impaired, 7.8% had hearing impairment and 2.9% were handicapped (Fig.5). 71.8% of the observed population was aware of the impact of oral health on systemic health while 28.2% were unaware of it (Fig.6). In the surveyed population, 47.6% of the participants had no dental complications while 32% had dental caries and 11.7% of the participants were suffering from other complications whereas 9.7% had periodontal disease (Fig.7). The equipments used for their maintenance of oral hygiene were investigated and the result was found to be 56.3% uses only toothbrush and toothpaste, 6.80% uses mouthwash, 27.2% all the three of the above whereas 4.85% of the participants uses no equipments for their maintenance (Fig.8). When it was questioned about the hindrance which makes them lack oral health, 70.8% of the population agreed that it is their lack of awareness, 19.4% accepted the irresponsibility of caretaker and the equal quantity of them answered as because of their disability (Fig.9). 65% of the disabled persons were aware of the fact that their disability also has an impact on oral hygiene and 35% of the participants were unaware (Fig.10). Also, 72.8% of the population was aware that proper diet is also a way of oral hygiene practice whereas 27.2% were unaware (Fig.11). Of the observed population, 47.6% visits the dentists periodically while 52.4% don't have the habit of visiting a dentist periodically (Fig.12). Similar study by Seby J.Gardens et.al., includes oral health survey in children attending special schools,Chennai (Gardens *et al.*, 2014). Another study on Oral health status of 254 mentally retarded subjects by Manish Jain et.al., in Udaipur (Jain *et al.*, 2009). Yet another similar study by Dinesh Rao et.al., on oral hygiene status among 537 disabled adolescents children in Canara (Khan *et al.*, 2019).

The statistical analysis was carried out by Chi-square test. We have seen the association analysis between age and the disability possessed by the participants (Figure 14) which is statistically not significant with p value= 0.5 , association between qualification of parents and frequency of brushing (Figure 13) which is statistically significant with p= 0.015; implying that the parents' qualification has a bearing on their instilling of good oral hygiene practices in their children, awareness on impact of oral health on systemic health (Figure 15) which is statistically significant with p= 0.04, oral complication they suffer from (Figure 16) which has no statistical significance with p= 0.4, dental equipments used to maintain oral hygiene (Figure 17) which is statistically significant with p= 0.013; revealing that the only dental instrument majorly used by the mentally and physically challenged individuals is tooth brush with tooth paste , the habit of visiting dentists periodically (Figure 18) and has no statistical significance with p= 0.48.

A similar study was conducted by Supreet Kaur et.al., 2013, the population had 53%of mentally challenged people which supports our present study and adds as evidence (Kaur *et al.*, 2013). Another study by Dhanraj.M et.al., with a similar population in which 86% of them brushed only once in a day and thus adds evidence and supports our study (*Website*, no date). Yet another study in which 90.4% of physically challenged people use only toothbrush and toothpaste to maintain oral hygiene and the rest use neem stick and this lies almost close to our study and supports our present study (Palaparthi *et al.*, 2012)

The results may likely vary by increasing the sample size and inclusion of more criteria which serves as limitations of this study. Our present study has the goal to create awareness among differently abled persons and also as dental professionals as it is our responsibility to enable oral care facilities and enhance the treatment modalities to the differently abled individuals to maintain good oral health which reflects on their systemic health (Basha, Ganapathy and Venugopalan, 2018). Though esthetic value can be improved by prosthodontic treatments and procedures, oral hygiene remains as a basic practice that every individual should be aware of beside differently challenged people (Ashok *et al.*, 2014; Venugopalan *et al.*, 2014; Ajay *et al.*, 2017). Our institution is passionate about high quality evidence based research and has excelled in various fields ( (Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Vijayashree Priyadharsini, Smiline Girija and Paramasivam, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; Chandrasekar *et al.*, 2020; Mathew *et al.*, 2020; R *et al.*, 2020; Samuel, 2021)

**CONCLUSION**

From the present study, it is evident that the parents and caretakers possess better knowledge and awareness of oral hygiene practices followed by the physically and mentally challenged persons in spite of the challenges faced by them.our study showed that educated parents instill better oral hygiene practices in their children.this needs further

impetus. Awareness programs for the individuals as well as their caretakers and teaching proper oral hygiene practices will ensure an improvement in oral health as well as systemic health.

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