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**KNOWLEDGE, ATTITUDE AND PRACTICE OF DENTISTS TOWARD PROVIDING CARE TO THE GERIATRIC PATIENTS IN TAMIL NADU – A CROSS SECTIONAL SURVEY.**

**KEY WORDS:** Geriatric dentistry, Dentist, Knowledge, Attitude, Survey.

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**ABSTRACT**

**Introduction:** Worldwide, there have been rapid changes in the demographics, including an increase in the number of old people. The number of elderly adults is predicted to quadruple by 2050 and reach two billion individuals at the current trend. The study aims to find out the perception of dentist towards geriatric dentistry. **Materials And Methods:** This cross-sectional study was approved by the Ethics Committee of Adhiparasakthi dental college and hospital. The total sample size was estimated around 240 samples and a self-administered questionnaire was sent online survey. The collected data were subjected to statistical analysis. **Results:** A total of 231 completed questionnaires (response rate = 88%) were obtained. Mean of age was 34.4 ± 8.1 (23–71 years) and 62.8% (n = 145) were female. The percentage of the patients in different age groups visited by the dentists during the past month showed that the most frequent age group was the 18–40 year group (40%). A significant correlation was observed between their practice and attitude. Availability of equipment for the ease of access revealed that 54% of dental offices/clinics had adequate lifts. Only about 20% of them had ramps and wall hangings and almost 24% had good flooring. **Conclusion:** The dentists in our study exhibited a modest level of expertise and skill in treating the dental issues of elderly patients. A major of them, were sympathetic towards the elderly. Therefore, dental education policy makers should prioritise developing geriatric education in dental institutions, particularly clinical education

**INTRODUCTION**

Worldwide, there have been rapid changes in the demographics, including an increase in the number of old people. The number of elderly adults is predicted to quadruple by 2050 and reach two billion individuals at the current trend. In India, a developing nation, the proportion of individuals over 65 years old is projected to rise from 8 to 22% by 2045.[1] As a result, nations should prepare for the ageing population and implement the necessary policies to satisfy their health demands. Some chronic diseases are more common as people age, and it has been shown that many of these disorders have oral symptoms that can make chewing and swallowing difficult.[2]

On the other hand, it has also been suggested that dental health and general health are related. Hung et al. reported that six of the ten systemic diseases examined—diabetes, coronary heart disease, congestive heart failure, high blood pressure, asthma, and liver condition—were related to oral health outcomes[3]. Poor oral health in elderly persons can also be caused by difficulty conducting oral health self-care due to physical and mental impairments. Other frequent issues that might possibly endanger oral health include a lack of access to dental care due to financial limitations and a lack of family support[4].

The frequency of caries and tooth loss remains significant in underdeveloped countries, despite the fact that the edentulous rate has fallen by 50–60% over the past 20 years in industrialised nations.[5] Indians above the age of 70 are thought to be edentulous in roughly 52% of cases, the percentage even reaches 80% in certain provinces. In general, systemic illnesses and drugs make oral problems more complex in older adults, making this age group a distinct one that requires specialised preventative and therapeutic oral health care.[6] Therefore, the dental teams must have specialised knowledge and abilities to deliver the necessary oral treatment. According to a poll, about 20% of

Belgium's recently graduated dental students said that they lacked the expertise necessary to adequately treat senior patients. In order for dentistry students to establish professional behaviours and practical patterns, attitudes towards elderly individuals must be formed[7]. As ingrained predispositions that constantly influence people's responses in a positive or negative direction, attitudes are characterised. Dentists and senior students, however, can exhibit negative attitudes about delivering oral treatment to the elderly[8].

According to research by Kuthy et al., 37% of senior dentistry students were hesitant to treat elderly patients in the future. This result was also observed in another study by Major et al., which shown that even predicted willingness to treat changed as students advanced through their predoctoral studies, becoming more unfavourable towards the older patients[9]. Students must be sensitive to the needs of underprivileged groups in order to meet the accreditation criteria of dentistry education at dental schools. In order to offer effective treatments, they should be aware of various care delivery models that can address care obstacles. [10]

However, recent research has shown that the majority of Indian Dental College do not adequately address geriatric dental education in their curriculum. This study sought to evaluate general dentists' knowledge, attitudes, and practises with regard to geriatric dentistry in light of the ageing population and the dearth of information regarding dentists' levels of preparation. It also assessed the accessibility of the necessary care facilities in dental settings.

**MATERIALS AND METHODS**

This cross-sectional study was approved by the Ethics Committee of Adhiparasakthi dental college and hospital. Participation in this study was voluntary, and the informed consent was gained individually. The methodology of the study is enclosed below.

**Sampling**

**Sample Size Estimation:**

Participants included general dentists working in dental clinics and private offices with at least 1 year of experience. We used the sampling formula for qualitative variables like proportion ( $n = \frac{Z^2 \cdot p \cdot q}{d^2}$ ), where  $Z = 1.96$  (at 5% type I error ( $P < 0.05$ )) and  $p =$  Expected proportion in population based on previous studies or pilot studies.  $d =$  absolute error or precision and has to be decided by researcher. In our study, assuming an  $\alpha$  (type I error) of 0.05 and taking into account the percentage of dentists with good knowledge (11%) about geriatric dentistry in other similar study and the precision of 5%, the sample size was calculated to be 150. Considering the design effect of 1.5 of cluster sampling and considering the probable sample loss, it was calculated to recruit 240 samples.

**Sampling Method And Data Collection**

List of dentists in each region was obtained from the Indian Dental Association and in each of the selected regions, 40 dentists were chosen based on the systematic random selection including 25 dentists working in dental clinics and 15 from those working in private offices in each selected region through online. The study was carried out from January to March, Tamilnadu. Data collection tools A self-administrated questionnaire was used to collect the data through online. The first part of the questionnaire included demographic information such as gender, age and frequency of visiting different age groups in offices or clinics; it also included questions about passing a geriatric dentistry course at dental college. The second part of the questionnaire comprised 27 questions asking about the dentists' knowledge (True / False / Don't Know), with scores in the range of 0–30. Questions were adapted from Hatamiet al. The themes of the knowledge section included the normal aging of the oral cavity, common oral conditions in the older people, social aspects of aging, and dental care modifications for the older adults.

**QUESTIONNAIRE**

Reliability and validity of the knowledge questions were assuring previously. For the attitude part of the questionnaire, 17 questions were selected based on a 5-point Likert scale ranging from strongly disagree = 1 to strongly agree = 5. Items were developed based on the Persian version of the Geriatric Attitudes Scale, which had been translated and validated to English language. Except for the statement "older people act too slowly for modern society," which was changed to "I understand the problems of ageing including physical and mental limits imposed," all 14 of the original Geriatric Attitude Scale's questions were included in the questionnaire used for the current study. In addition, three more inquiries about the delivery of dental treatment were added, including "welcoming the enrollment of older persons in dental offices, whether older people followed the dental counsel provided to them, and if giving dental care to the older takes more time than for the young." The fourth component, which included seven questions about the practise structure, asked about the dentists' self-perceived competence to offer preventive and treatment plans, handle situations involving elderly persons, and have good communication and emotional control. The responses were graded using a five-point Likert scale, where 5 represents a complete agreement and 1 represents a complete disagreement. The questionnaires were distributed among the dentists at the beginning of their workday by one of the Principal Investigator. The survey was sent to the dentist and a week time is given. It was also emphasized to answer the questions truthfully without consultation with other colleagues. Sampling was continued till the predicted sample size was achieved.

**Statistical Analysis**

Data were fed into the SPSS software (IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp) and analysed

by descriptive and analytical statistics. The mean scores of knowledge and attitude were calculated. Based on the total scores obtained, the relationship between knowledge and attitude mean scores and their correlation with age and mean work experience were analysed using Pearson correlation coefficients. ANOVA test was used to assess the differences of knowledge and attitude mean scores based on the frequency of the older patients admitted to office or clinic, as well as passing a geriatric course at university and having relationship with their grandparents. Differences based on gender was analysed using T-test.  $P \leq 0.05$  was considered significant for all statistical analyses and was adjusted in multi-comparisons based on the number of comparisons.

**RESULTS**

A total of 231 completed questionnaires (response rate = 88%) were obtained. Mean of age was  $34.4 \pm 8.1$  (23–71 years) and 62.8% ( $n = 145$ ) were female. Mean work experience was  $9.2 \pm 6.8$  years (42–1 years). The percentage of the patients in different age groups visited by the dentists during the past month showed that the most frequent age group was the 18–40 year group (40%). The frequency of patients in age group of 65 and older was about 13%. Further, 54% of the dentists ( $n = 117$ ) reported that either their father or mother was old and 45% ( $n = 101$ ) stated they had close relationships with their grandparents (Table 1). Dentists' preferences in providing services to different age groups are shown in Table 1. Accordingly, 64% of the dentists preferred to provide services to the adults aged 25–44 years and 5% of them were interested in providing services to the older people over 65. Knowledge status the mean score of knowledge was  $13.3 \pm 2.9$  (out of 30). Pearson correlation test showed no significant correlation between knowledge and duration of work experience or age. Table 2 demonstrates the comparison of knowledge mean scores among dentists based on their demographics and work characteristics. The mean score of knowledge was significantly different among dentists based on the percentage of their patients in the age group 65 and over (ANOVA,  $P = .02$ ). Also, almost 60% thought it was difficult to gain a medical and dental history of them; further, over 60% preferred to provide care to the young rather than the old.

A high percentage of dentists (73%) believed (agree or completely agree) that looking after the older people was the society's responsibility. Moreover, a large number of them (75%) reported that they understood the physical and mental problems of this age group and 30% held the view that the advice given to the older people was fully taken by them. Also, 52% of the dentists believed that older people appreciated the health service more than the young people. Higher scores meant a more positive attitude toward geriatric populations. Regarding the probable scoring interval of 17–85 for the attitude section, dentists' attitude toward geriatric patients was higher than the average of 34 and tended to the higher scores. Table 2 presents the comparison of attitude scores among dentists based on their demographics and work characteristics. The mean score of attitude was not significantly different based on gender or age of dentists. The dentists who were more willing to attend geriatric educational courses (ANOVA,  $P$ -value  $< 0.001$ ) and those whose grandparents had passed away had a significantly higher positive attitude (ANOVA,  $P$ -value = 0.018). Dentists who were almost willing to attend such courses showed higher scores attitude in comparison with those who were highly unwilling ( $p < 0.001$ ) and almost unwilling ( $p = .001$ ). According to the results, more than half of the dentists found themselves capable of providing the appropriate treatment to the older people and about 40% were satisfied with their ability to communicate. Nearly 30% of the dentists found their knowledge and experience insufficient in treating the older people with complex medical problems and about 40% believed that the current dental education in dental schools did not provide adequate training in geriatric care. By

summing the scores of responses to the questions 1–6 of the ability section, the mean score of the practice was  $21.2 \pm 4.3$  (9–30). There was no significant correlation between the dentists' knowledge and practice. A significant correlation was observed between their practice and attitude ( $R = 0.2$ ,  $P$ value = 0.006). Availability of equipment for the ease of access revealed that 54% of dental offices/clinics had adequate lifts. Only about 20% of them had ramps and wall hangings and almost 24% had good flooring.

**DISCUSSION**

Only around 13% of the participants in the current study had high knowledge, and the majority of them had a fairly favourable attitude towards elderly persons. The dentists' knowledge and attitudes, as well as their attitudes and practices, had a noticeably weak positive connection[4]. Only 5% of dentists, however, were interested in serving the elderly, and many of those who were thought that their academic dental training had not effectively addressed geriatric dentistry. In accordance with the results of our study, Moreira et al.'s survey in Brazil found that the majority of dentists had a fair amount of knowledge of and attitudes towards the elderly[10]. According to Bots-VantSpijker et al.'s study, there is a substantial link between gender and attitude. They contended that women may have higher attitude scores because of their greater capacity for empathy and feeling. In our investigation, the difference was insignificant. The majority of dentists, according to Alae et al. (88.5 and 11.5%, respectively), have inadequate and intermediate understanding of geriatric dentistry[11]. In contrast, the majority of participants in our survey had intermediate expertise, and 10.8% said they knew little or nothing about geriatric dentistry.

According to our survey, a large majority of dentists felt that dental college training was insufficient in geriatric dentistry. The contribution of dental curriculum in Indian dental college was still a questionable factor. Incorporating their concept can orient in new ventures and can produce importance to geriatric community[12]. Although it has been demonstrated that dental students may readily learn about ageing during academic courses, a clear correlation between information acquisition and a change in attitude cannot be established. In our study, there was also a weak link between knowledge and attitude, link coefficients 0.35 are considered low or weak correlations, 0.36 to 0.67 are mild or moderate correlations, and 0.68 to 1.0 are strong or high correlations.

In order to positively shape, change, and influence attitudes, a variety of discipline-specific interventions have been used, such as ageing awareness training, multi-modal interventions (such as didactic lectures, group activities, simulations, and mentorship), clinical geriatric rotations, senior mentoring programs, and the integration of ageing content into the curriculum. The two key components involved in determining attitudes towards this age group have been proposed as positive personal experience with older people and social impac[13]t. The development of good attitudes towards older individuals among dental students can be greatly aided by professional socialization, which includes exposure to faculty members who have these attitudes.

When compared to their first year of dental college, when they were more averse to treating low-income patients and the frail elderly, a survey conducted in Iowa University by Major et al. revealed that many significant changes had occurred in the feelings towards treatment and willingness to treat specific underserved populations, including the elderly, five years after graduation[8]. In addition, they proposed that other factors could influence students' propensity to treat impoverished communities in addition to patient exposure. Cost, fear, availability, accessibility, and the qualities of the dentist were identified by Borreani et al. as the major five active obstacles to dental treatment for older persons[14].

A survey carried out in Iowa University by Major et al. revealed that many significant changes had occurred in the attitudes towards treatment and willingness to treat specific underserved populations, including the elderly, five years after graduation[8]. This is in contrast to their first year of dental college, when they were more averse to treating low-income patients and the frail elderly. They also suggested that in addition to patient exposure, other variables could affect students' tendency to serve underprivileged groups.

The private sector, which accounts for over 90% of the oral health care system in Tamil nadu, is the dominant sector. According to a 2017 poll of the dentist population10%, of those over were reported to be covered by insurance, while 90% had no insurance at all. A third of the elderly population might benefit from dental services. [15](at least one dental visit per year). The majority of high-income nations already offer some kind of dental care to children and teenagers, although the availability of dental care for the elderly population differs to some extent.

Long wait times for dental care are a result of a number of factors, including limited public dental coverage in the majority of nations, a lack of public coverage for some complex and expensive procedures like crowns, bridges, and dentures, as well as limited supply in public dental clinics due to high demand. [16]

Various strategies must be taken into account in order to make it easier for older people to access dental care, including personal actions (such as convincing them to get it if they need it), system changes (such as cost reduction, better information provision, and timely and appropriate patient management), and social issues. (e.g. solving the isolation and loneliness problems). Therefore, it appears that among elderly individuals, social and systemic changes are more significant than individual behaviour.

**Limitations**

In Tamil nadu, the private sector is responsible for around 90% of dental treatment. Despite the fact that the majority of dentists work in the private sector, we did not inquire about their workplace because this may have affected how they responded when asked about their control on the working environment and attitude section. Furthermore, the dentists themselves claimed that the necessary facilities were present in dental settings; we did not assess this by direct observation. However, it appears that our participants' gender distribution is comparable to that of dentists in Tamil nadu as a whole, which, in addition to the closeness of the educational curriculum taught at dental colleges, may help ensure the generalizability.

**CONCLUSION**

The dentists in our study exhibited a modest level of expertise and skill in treating the dental issues of elderly patients. A major of them, were sympathetic towards the elderly. Therefore, dental education policy makers should prioritise developing geriatric education in dental institutions, particularly clinical education. Additionally, providing ongoing training and conferences on topics like care management principles, geriatric physiological changes, and communication skills may be highly beneficial for newly minted dentists. Furthermore, it is important to educate dentists about the requirements and emphasise the need of compliance with them by developing suitable regulatory procedures. This is vital given the lack of facilities and standards required to deliver treatments to older persons.

**Table 1: Demographic And Work Characteristics Of The Dentist**

	FREQUENCY	PERCENTAGE
GENDER		
MALE	86	37.2

FEMALE	145	62.8
TIME SINCE GRADUATION		
<5 YEARS	56	35.9
5- 15 YEARS	65	41.7
OVER 15 YEARS	35	22.4
PERCENTAGE OF PATIENTS VISITED IN THE LAST MONTH IN THE AGE GROUP OVER 65		
<15%	116	72.5
15 – 30	30	18.8
>30	14	8.8
Having an old father /mother		
yes	117	54.2
Relationships with their grandparents		
Close relationship	101	44.9
Not so close	18	8
They are not alive	106	47.1
Preference of the dentists in providing care to different age groups		
1-4 years	4	1.8
5-12 years	43	18.9
13-18 years	46	20.3
19-24 years	70	30.8
25-44 years	144	63.4
45-65 years	45	19.8
Over 65 years	12	5.3
Willingness to attend continuous training courses on geriatric dentistry		
Highly willing	34	15
Almost willing	109	48
Almost unwilling	65	28.6
Highly unwilling	19	8.4

**Table 2: Comparison Of Mean Score Of Dentist Knowledge And Attitude Based On Their Demographic And Work Characteristics**

PARAMETER	Mean of knowledge	SD	P-value	Mean of attitude	SD	P-value
<b>Gender</b>						
Male	13.5	2.8	0.2	55.3	6.3	0.3
Female	13.3	3.1		56.1	5.9	
<b>Time since graduation</b>						
<5 years	13.9	2.5	0.2	55.7	5.4	0.6
5 - 15 years	13.3	3.1		55.6	6.7	
over 15 years	14.3	2.1		56.9	6.4	
<b>percentage of over 65 year patient visited per month</b>						
<15%	13.9	2.6	0.02	56	6.4	0.2
15 to 30 %	12.9	3.5		54.4	6.8	
>30%	12	3.7		53.2	5.9	
<b>Having an old father/mother</b>						
yes	13.1	3.1	0.08	56.1	6.2	0.6
no	13.8	2.8		55.6	6.1	
<b>Relationship with their grandparents</b>						
close relationship	13.1	2.8	0.08	55.1	5.8	0.018
not so close	12.5	3		53.5	5.4	
they are not alive	13.9	2.9		57.1	5.9	
<b>Willing to attend continuous training courses on geriatric dentistry</b>						
highly unwilling	13.1	2.2	0.3	50.1	4.8	<0.001
almost unwilling	13.1	2.7		53.7	6.3	
almost willing	13.2	3.2		57.5	5.2	
highly willing	14.1	2.5		56.7	6.1	

**Table 3: Attitude Of General Dentist Towards Providing Dental Care To The Old People**

QUESTIONS	Completely disagree	Disagree	no idea	agree	completely agree
1- pay more attention and have more sympathy to my old patient than the young	1.3	7.2	29.1	41.7	20.6
2- all dental advice to the old is followed by them	3.6	38.2	27.6	22.7	8
3- I highly understand the problem of the old patient (physically and mental limitations)	1.3	8.5	15.2	55.2	19.7
4- when people get old, they become less organized and more confused	8.1	39.5	34.1	13	5.4
5- I welcome the admission of the older patient to my office	3.2	16.2	36.5	35.1	9
6- providing care to the older patient takes more time in comparison to the young patient	1.8	22.2	25.3	43.4	7.2
7- Old patient do not contribute much to the society	18.2	42.7	24.5	8.6	5.9
8- too much human and material resources are spent for the health expenses of geriatric patient	6	41.3	21.4	16.5	6.9
9- providing care for the older patient is the society's responsibility	1.8	10.3	15.2	42.2	30.8
10- some health expenses of the older people must be directed to the pediatric patients and AIDS research	11.7	47.3	26.6	10.4	4.1
11- Listening to the past experience of older people is interesting	11.8	10.2	23.6	43.6	20.9
12- Being with most of the other people in pleasant	1.8	14.3	36.8	35	12.1
13- Older people appreciate the health service more than the young ones	2.3	14.9	30.3	34.4	18.1
14- Management of chronically ill older patients is disappointing	5.9	44.6	27.9	17.6	4.1
15- If I have a choice, I would prefer to provide care to the young patients than old once	3.1	15.6	15.6	41.1	24.6
16- Tacking medical and dental history from an older patient is difficult and challenging	4	2.4	17.8	43.1	14.7
Older people have problems in paying their share of the health care costs	3.1	6.7	24.4	39.6	26.2

**Table 4: Self Reported Ability Of The Dentist Towards The Provision Of The Dental Care To The Old People**

QUESTIONS	completely disagree	disagree	no idea	agree	completely agree
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1- iam able to provide dental treatment plan according to the needs and prefrnce of the old patient	1.8	11.4	28.8	38.8	12.2
2.- iam able ot communicate appropriate to the old patient	0.9	6.3	14	15.4	27.5
3- I am able to care preventive care for the old patient	2.7	13.6	14	15.4	22.5
4- I am able to manage the medical emergency of the old patient	6.3	24.9	27.6	27.1	14
5- I am able to express the sense of empathy and to understand the old people	3.1	8.5	14.8	56.6	17
6- I have enough experience to manage the complexity of treating the old patient	4.9	24.2	37.7	25.2	13.9
7- I have received adequate training on geriatric dentistry in university	9.4	29.2	22	26.9	12.6

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