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Literature Review

Factors Affecting Regular Utilization of Dental Healthcare Services by Older Adults - A Review

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Abstract

Background: In most countries regular utilization of dental healthcare services by older adults (≥ 60 years) is a matter of concern as they seem to use the services less than any other age group. Therefore this review hopes to look at the factors affecting regular utilization of dental healthcare services among older adults.

Method: Relevant studies were retrieved by means of electronic databases; dated 1982 onwards; using pre-determined inclusion criteria mostly age specific for patients 60 years and above, preferably with a mentioned history of regular and/or irregular dental attendance pattern. For the purpose of this study, attenders were categorized as patients' with atleast one dental visit in the past 12 months and non- attenders with a dental visit more than a year. The data was analysed using CASP (Critical Appraisal Skills Programme Tool) for quality appraisal in the oral health field. Narrative synthesis was used to comprehend and understand the study data.

Main Results: The key factors of attenders were -being dentate; geographical location i.e. patients from urban areas; better education; women; higher social class; higher income; patients with dental insurance; non-smokers etc. Crucial features of non- attenders included being of lower social class; living in rural or remote areas; smokers; edentate; transport issues; problem only visit; cost of treatment; poor cognition and physical function; dental fear etc.

Conclusion: As perceived earlier, being of an older age group i.e. 60 years and over, is not a deterrent to a regular dental visit but it appears that lack of proper transportation, income, location of the dental healthcare facility, lack of awareness of the importance of oral hygiene, cost of the dental treatment that poses as barriers for a regular dental visit amongst this age group.

Keywords: *Utilization of Dental Health Care Services; Older Adults; Geriatric Dentistry, Dental Visit*

Background

Utilization of dental healthcare services or realized "access"- "is a population's potential entry to the health care system and everything that enables or obstructs their use" [1,2]. Access to a healthcare service also means getting the required service at the right time to enhance the health outcomes [2]. Regular dental visits by older adults (≥ 60yrs) in many countries is a matter of concern as this age group is mostly overburdened with other medical aliments and hardly deem it necessary to visit their dentist as a part of their overall medical care [62].

Studies [3-12,62] have shown that regular dental care helps to enhance the patients' overall general health especially among patients suffering from chronic diseases like diabetes, cardiac disease, knee joint disorders, GERD (Gastro-oesophageal reflux disorder), Multiple sclerosis etc.

Senior population is a reality which means a longer life span, reduced income and restricted healthcare resources available to this age group [13]. Ageing population of the world will be an estimated 22% by 2030. It has been observed that at-least 53.5% of older adults are regular attender in the US [12]; a Swedish and Danish study [14] reported 80% regular dental attendance; UK- 72% [69]; Canada-41% [62]; India reports 28% [15]; China -11.7% [6].

The authors have observed from a rural charitable dental clinic based in India that older patients' from agrarian background hardly ever visit a dentist or the dental visit is just for tooth extraction [15,16]. The reasons cited among these agrarian older adults was that there no one at home to get them to the dentist as the family members were busy with other things consequently some older women had to traverse long distance on foot to the dental facility [4,17]; a few rural areas in the interiors lack appropriate transportation [4,15-17]; low socio-economic conditions i.e. not wanting to save the tooth and opting for extraction due to economic reason [15,16]; lack of appropriate knowledge regarding oral health- are some of the reasons for lack of regular dental visits [16].

On the other hand in the urban industrialized countries, elderly population is increasing and so is the age of the tooth [6]. Many older people (≥ 60 yrs.) retain their teeth longer; with problems unique to this age group for e.g. root caries, periodontal disease etc [6,7]. In the Indian urban dental set-up it has been observed by the authors that some well-motivated children of older parents do take interest in getting their parents treated and get them for their regular dental check-up and subsequent treatment. Nonetheless the most common factors observed for lack of regular utilization of dental healthcare services in both the rural and urban setup is -a matter of transportation facility to the dental clinic; need for an escort- preferably they need a family member to accompany them as it boosts their moral support; and cost issues- as mode of payment in India for dentistry is mostly out-of-pocket which is perceived to be expensive by the older patients. Such issues may be a deterrent to regular dental visit in India.

The issue of lack of regular dental healthcare utilization by older adults has been a dilemma of many governments around the globe as a substantial amount of human capital and GDP (gross domestic product) is invested in the production and distribution of resources [6,18-21]. In order to improve the utilization of dental services in terms of regular dental attendance and regular audit of dental services for the older adult patient it would be imperative to look into issues pertaining to lack of utilization of essential dental healthcare services by older adults [22]. Hence the question this review hopes to decipher is – what are the factors affecting regular utilisation of dental healthcare services and how can it be boosted optimally to respond to the ever increasing and varying needs of the older adult population.

Preliminary Literature Review

In a climate of aging population, growing health care technology and limited funds, the objective of the healthcare system should be to promote health and well-being and improve the patient's quality of life through optimal provision and utilization of health care services at an affordable cost [23]. Therefore the authors conducted a preliminary literature review so as to get an essence of what factors in the past studies have contributed to a regular or irregular dental visit and presented them under four sorts: Utilization of dental healthcare services; Distribution of healthcare; Mode of payment and Oral health related quality of life.

Utilization of dental healthcare services

Literature has discerned a large gap in the utilization of dental healthcare services by older adults based on the following factors: socio-economic parameters for e.g. income [2,12,23-26]; race/ethnicity [4,12,27-29,32]; gender [30]; social background [21,24,25]; residence in different geographical areas (urban/rural) [4,12]; public/private dental health care services [30]; lack of self-perceived dental needs [7,12,31,50,54] etc.

Furthermore most older adults under-utilise dental health care services as they face myriad of problems relating to chronic disease [32]; disability resulting in lack of mobility [5,12,33,34]; mental disorders [17,18,25,35]; varying personality traits of the older patients [33,36]; fear of dentistry [37]; lack of perceived or expressed need; financial issues due to social inequalities [27]; older people living in residential facilities for the aged [12,38]; unemployment among male patients; and even the dentists' vacillates in treating older patients especially the institutionalised ones [12,39,40]; less recall visit appointments given by public dentists as compared to their private counterparts etc [55,56].

Distribution of healthcare

A study in Vancouver [25] has debated the lack of consensus on the definition and distribution on basic oral health care. In most countries, utilization of dental services among adult patients is for emergency purposes for e.g. painful tooth [57] or for other curative issues rather than prevention [57]. Dentistry has elements that are both curative and preventive in nature. The curative element of dentistry is technically demanding and costlier than the preventive one; therefore the patient has a very different perspective of dentistry especially regarding the cost issues of basic oral care and complex treatment needs i.e. root canal treatment; provision of prosthesis to replace teeth etc [25,42].

Less than half (42%) of the patients utilize non- governmental services; one third (36%) attends private clinics and a quarter (22.5%) visited public services [49,57]. Additionally there is difference in the quality of dental care provided based on social differences [24,27,28,42,43]. People from low income groups select dental practices where low priced treatments - more extraction and removable partial dentures and fewer alternatives are offered but have longer waiting time [27,28]. Inequities in distribution of oral healthcare are also compounded by the issue of commercial self-interest assigned to dentistry [25] as superior quality dental treatment is associated with higher price [25,27] which may be a deterrent for regular visits to the dentists especially by older adults [25].

Also the issues of inequitable oral health care distribution cannot be addressed as separate entities from the general political and economic structures of society. It has to be addressed as a whole along with healthy food habits, personal hygiene needs with clean water and curative treatment with skilled manpower and costly equipment and supplies [25].

Mode of payment

There is an expressed concern over dental insurance coverage and utilization of services by retired adults [6,41,60]. Dentate older adults with private dental insurance have a higher propensity of regular dental visits [11,12,31,41.44]. According to a study done in the US52, the gap between dental needs and demand for dental care in terms of low utilization of dental care exists due to price and out – of – pocket payment [44,45].

The study [58] states that dental insurance reduces financial burden but does not eliminate the price barrier [46]. Moreover government agencies around the world are more concerned with higher prices with hospital services rather than similar price increases for dental services where the financing is predominantly private [47].

Oral health related quality of life (OHRQOL)

Disparities in access to oral health-care services, reflects the nature of utilization of dental services vis- a vis a poor oral health related quality of life especially for the low socioeconomic dental groups [71].

A prospective cohort study done in New Zealand [48] found that maintenance of routine dental attendance was associated with better self-reported oral health. Ideally, oral health education must have a structured focus of health promotion among adults based on social and epidemiological needs of the population. Primary dental care should be integrated with secondary and tertiary dental care services in a manner so as to control oral health issues at grass root levels in order to improve the medium and long term oral health related quality of life of the dental patients [50].

It was found that decrements that the oral health related quality of life (OHRQoL) due to socio-demographic factors exist among both dentate and edentulous adult patients [54]. In the dentate group- transportation difficulties; race; income and education were associated with decrements in OHRQoL as compared to the edentulous group where only race and education emerged as important determinants [54]. A study [51] has shown positive results with improved dental health care services facilitating in recovering from quality of life decrements with chronic dental diseases like dental caries and periodontal disease.

Methods

The specific objective of the study was to identify factors that affect regular utilization of dental healthcare services among older adults. The concept of this study revolves around Grossmans [1], analogy- "durable stock that depreciates over time" - that is the utility of oral health has been compared to durable stock which appreciates by investing in oral health capital by way of self-care combined with utilization of oral health care services. The theoretical rationale' pertaining to doing this study is to understand the effects of sociodemographic factors on the utilization of dental services as documented in literature in depth. Therefore the authors have designed this study based on Andersen's Model51 as it was better at predicting dental use [60] (Figure 1).

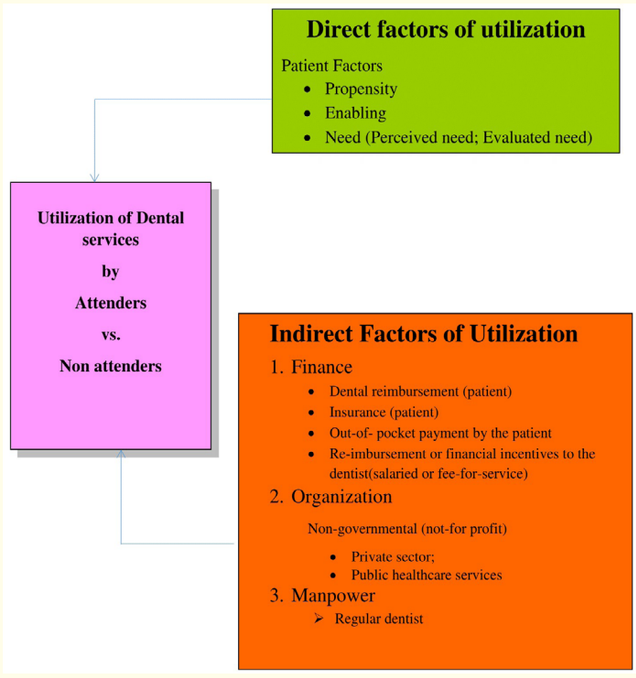

Figure 1: *Perceived model of the study (Adapted from Andersen's Model).*

According to this model [51] people's use of health care function is based on three criteria: Predisposing component = the tendency of the individuals to use the service. For example- Age, gender, marital status, household composition, education, occupation, ethnicity, health beliefs, etc. Enabling component = the means the individuals have available to them for use of the services. For example -Income, education, health insurance; travel, waiting time; social relationships, social support, etc. Need component= illness level which is the most immediate cause of health service utilization. For example- self Perceived need = painful teeth and gums: perceived oral health status; use of dentures etc. Evaluated Need: "Professional judgment of patients' health status and their need for care" [5].

Inclusion criteria of this review framework were based on the PECO format i.e. (Participants, Exposure, Comparison, and Outcome) (See Table 1).

Serial No.	Reference	Author	Year	Country	Study Design	No. of Participants	Age	Males	Females	Attenders	Indirect Factors	Predisposing	Enabling	Perceived need	Evaluated Need
1	30	Adams	2004	Australia	Cross-sectional Telephone survey	2100	≥60	34.90%	37%	Urban- 65% Rural-49.3% Remote-35%	-	Age Sex Country Of Birth	Geographical Location Household Income Occupation	Smoking Natural teeth Bleeding Gums Loose Teeth Bad Breath Tooth Ache Interference with social activities like eating and sleeping	Not Mentioned
2	60	Evashwick	1982	US	Cross-sectional Household survey	717	≥62	26%	74%	Not mentioned specifically	Education	Age Sex Marital status Race	Education Completed Annual Income	Perceived health status Index of health problems Dentures	Not Mentioned
3	61	Wu	2007	China	Cross-sectional Household interview	1044	≥60	41-44%	56-59%	Urban- 11.7% Rural-3.4%	Private Health Insurance Veterans administration cover Medicaid coverage Manpower-Regular Dentist Dentists' Income Social medical insurance coverage Collective medical insurance coverage	Age Sex Education	Monthly income Ability to pay out of pocket	Life satisfaction Living alone Perceived health status Regular physical exam Concern about healthy food	Not Mentioned
4	62	Brothwell	2008	Canada	Cross-sectional	1751	≥65	41.50%	58.50%	21.90% dentate-36.2% edentate-13.5%		Age Sex Education Marital Status	Monthly income	Self-reported good general health ≥ 4 limitations on activities of daily living ≥ 4 health services used in the past year Edentulousness Dental problem in the past year	
5	63	Lang	2008	England	Cross-sectional	2946	≥65	45%	51%	66.70%	Index Of Deprivation	Age Gender Region Urbanization	Social Class Level of Education	Self-reported health Cigarrete Smoking	Not Mentioned
6	22	McGrath	1998	UK	Cross-sectional	454	≥65	40%	60%	37%		Age Gender	Social Class Mode of payment	Self-reported oral health related quality of life domains	
7	64	Marshall	2009	US	Cross-sectional	447	≥65	34.32%	65.78%	44.70%	Has medical insurance Has dental insurance Last visit to a medical doctor	Age Gender Primary Language Race/ Ethnicity Place of Birth	Education	Currently smokes Cigarettes or cigar Self-rated condition of teeth and mouth	
8	11	Dolan	2005	US	Observational cohort study	414 - start and 317 at conclusion	≥75	30.20%	69.80%	70.70%	Dissatisfaction with finances	Age Gender		Dental Health status Physical Health status Functional Health status	
9	65	Mariño	2017	Chile	Cross-sectional	438	≥65	22.60%	77.40%	31.50%	Health Insurance	Age Gender	Place of residence Level of education	Oral health knowledge Attitudes to healthcare Barriers to treatment Edentulousness Number of teeth Missing teeth	
10	66	García	2007	Mexico	Cross-sectional	698	≥60	31.70%	68.30%	53.60%		Age Gender Marital Status	Schooling Paid work Monthly income	Cognitive decline Depression morbidity Medication consumption	DMFT index
11	67	Fereshtehnejad	2018	Sweden	registry based cross-sectional study	46,334	≥75	41%	59%	79.80%		Age Gender Place of residence		Type of dementia Medication at the time of diagnosis Mortality	Type of procedure

Table 1: *Inclusion Criteria.*

Types of participants: Studies were included only if the referred participants were of the following criteria: either sex (male/female); any race/ethnicity/socioeconomic status/fit and healthy and those with any medical history; living in residential homes or community; chronically ill but preferably ambulant.

Types of exposure: Dental health service utilization is "complex" as its components (for example - economic factors and socio- demographic factors) interact with each other at various levels. Therefore it was thought to be a good idea to separate the component parts in terms of direct and indirect factors that affect the patients' visit to the dentist. Based on Andersens' model [51], three major criteria were presented as direct factors.

Direct and indirect factors of utilization of dental healthcare services

Direct factors of Utilization

Patient Factors

- Propensity
- Enabling
- Need (Perceived need Evaluated need)

Indirect Factors of Utilization

1. Finance
   - Dental reimbursement (patient)
   - Insurance (patient)
   - Out-of- pocket payment by the patient
   - Re-imbursement or financial incentives to the dentist(salaried or fee-for-service)
2. Organization
   - Non-governmental (not-for profit)
   - Private sector;
   - Public healthcare service.
3. Manpower
   - Regular dentist

Types of comparators

Attenders' vs. non – attenders'

Visit to the dentist is used as proxy for utilization of dental health care services among older adults, therefore for this review, the working definition of utilization of dental services or visit to the dentist: "visit within a year is an indicator of a person's ability to access the professional services" [59].

It was also reckoned necessary to specify and classify comparators' for this study i.e. attenders vs. non- attenders' of dental treatment. Choice of comparator is important as it will have implications on the interpretations of the result.

Attenders: At-least one dental visit in 12 months.

Non-attenders: Those who have never visited a dentist or anytime more than 12 months.

Type of outcome: Not stated.

Exclusion criteria

Studies those are not eligible for the review

- Studies with age groups any other than 60 years old and over participants, will be excluded for this review.
- Utilization of dental health services by children and adolescents.
- Utilization of dental health services by non-ambulant hospitalized older adults.

Search Strategy: Our initial search (Table 2) generated 130 citations. The authors then read through the abstracts and extracted 71 relevant articles for the literature review. Out of this only 11 articles were tabulated as they had complete details against the pre-determined inclusion criteria of the review i.e. preferably mentioned history of dental attendance and the other studies were excluded mostly due to the "age factor".

Date of the studies	**1982-2018**
Sources	Internet/ hand searches/electronic libraries/bibliographies
Search strategy	Keyword search: "utilization/ use/ attendance/ of dental healthcare services," "older adults", "dentistry", "geriatric dentistry", "factors of dental utilization", "different treatments among older adults", "oral health related quality of life", "pain"; "curative" or "restorative services"; "long term"; "short term"; "regular"; "public dental" or "private dental services" "dental insurance The studies were searched using the PICO format (Participants, Exposure, Comparison, and Outcome) as key words of the research question which were then combined in different combinations to get an array of studies out of which the relevant studies were selected having the key components as selected in the inclusion criteria
Number of citations found	71
Relevant studies	11
Language	English language or studies with both regional language and English translation

Table 2: *Search Strategy.*

Quality Appraisal of the selected studies

The authors used CASP (Critical Appraisal Skills Programme Tool)70 for quality appraisal in the oral health field [2] (Table 3).

Reference	Clear Statement	Appropriate Methodology	Appropriate Research Design	Appropriate Recruitment Strategy	Appropriate Data Collection	Relationship between Researcher and Participants	Consideration of Ethical Issues	Rigorous Data Analysis	Clear Statement of Findings	How Valuable is the Research
Adams /2004	Yes	Yes-Telephone survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Location and not age an issue for regular dental visit
Evashwick/1982	Yes	Yes- The survey instrument as stated in the study was a questionnaire not solely devised for dental utilization	Yes	The population was predominantly white, low income public housing and mostly females	It was mostly a convenient sample	Yes	Yes	Fair	Yes	Education and not age is an important determinant for dental use
Wu/2007	Yes	Yes	Yes	Sample more urban than rural based on housing registration	Response rate more rural than urban mostly females	Yes	Yes	Yes	Yes	Significant Urban / rural divide strong determinant for dental use
Brothwell/2008	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	More frequent dental visits better oral health
Lang/ 2008	Yes	Yes -Data was collected from general health survey from England, 2005	Yes	The population was not specifically recruited for this study as it was from a health survey	Yes	NA	Yes	Yes	YES	Those living in the twenty percent of the most deprived neighbourhood had a RRR (Relative Risk Ratio) of 3.95 of having lost all their teeth
McGrath/1998	Yes	Yes- The study was a part of a general health survey for UK- Office for National Statistics Omnibus Survey Great Britain	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Regular Attenders had an enhanced oral health related quality of life
Marshall / 2009	Yes	Yes - the study was a field action report	Yes	Purposive sampling	Yes	Yes	Yes	Fair	Yes	Only 44.7% visited a dentist as compared to 79.6% to the medical facility in less than a year and cost was cited as a reason for irregular attendance
Dolan/2005	Yes	Yes	Yes	Self-selected sample which was more educated, better general health with higher rates of dental utilization	Yes	Yes	Yes	Yes	Yes	Impaired functional status is associated with lower use of dental services
Mariño/2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Rural older adults had a higher frequency of dental visits.
García/2007	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Most of the older beneficiaries were women who used private dental healthcare services
Fereshtehnejad/2018	Yes	Yes	Yes	Yes- Patient information was taken from the Sweden Dementia and Dental registries	Data was collated from the appropriate registries	None	Yes	Yes	Yes	There is a decline in dental utilization after diagnosis of dementia

Table 3: *CASP (Critical Appraisal Skills Programme Tool) for quality appraisal.*

Results

Key features of attenders

Were--- being dentate; geographical location i.e. patients from urban areas; better education; women; higher social class; higher income; patients with dental insurance; non-smokers were the key contenders to regular utilization of dental healthcare services etc (Table 4).

Reference	Author	Country	Year	Key Features of Attenders	Key features of Non Attenders
30	Adams	Australia	2004	Geographical Location- Urban had an advantage	Dental Visit Only for Problem
				Age not an issue for regular dental visit	People in remote areas had difficulty in getting an appointment
					Transport Issues to the dental facility
					Low Income among unskilled and semi-skilled
60	Evashwick	US	1982	Age not a significant factor for dental visit	Lack of regular dentist
				Education has a positive direct and indirect relationship to utilization of dental healthcare services	Transportation to the dental facility is an important determinant of delay for dental visit
				Regular source of dental care important for use	
				Having dentures strong determinant for use	
61	Wu	China	2007	Dental visit among the urban are 127% higher than the rural	Higher life satisfaction less number of dental visits
				Younger individuals with ability to pay out of pocket more liable to have dental visits	
				People with regular physical examination and more concerned about health food have more dental visits	
62	Brothwell	Canada	2008	Dentate visitation was significantly higher	
				Dentate -higher education, main supporting member not a family member, few limitations on ADL, greater use of health services, urban.	
				Edentulous- higher education , better income, greater use of health services, recent dental problems , denture wearer	
63	Lang	England	2008	Younger individuals; women; those who live in towns and villages as compared to urban; better educated; non-smokers; higher social class	Those living in the most deprived neighbourhood had a RRR OF 3.12 of symptomatic visits only as compared to 1.37 RRR of better neighbourhood
22	McGrath	UK	1998	Regular attenders reported an enhanced oral health related quality of life OR 1.55, CI(1.01,2.38)	-
				Oral health related quality of life did not differ between private of NHS health providers	
64	Marshall	US	2009	34.3% needed transportation for reasons of dementia, cane or wheelchair users for their regular dental visits.	50.2% cited cost as reason for irregular attenders
					92.3 % had medical insurance and only 47.5% had dental insurance therefore it was observed that their regular medical visit was among 79.6% as compared to only 47.5% regular dental visits.
11	Dolan	US	2005	Higher dental utilization is associated with lower rates of edentulism	Impaired physical function is related to lower regular visits to the dentist
65	Mariño	Chile	2017	People from rural areas had a higher propensity of a dental visit OR 2.15 CI(1.27-3.63)	Dental fear less likely to visit the dentist OR 0.43 CI(0.24-0.76
				People with secondary or higher education OR 1.65 CI(1.03-2.64)	
				More filled tooth surfaces OR 4.02 CI(3.58-4.51)	
66	García	Mexico	2007	Female gender OR 2.0; 6 years of schooling or less OR 1.4; carious teeth 22 or more OR 0.6 - were more likely to use services	
				81% used private care; 12.8 % social security care and 6.2% public care.	
				Main reasons for attendance were- 44.4% dental examination, 35 % tooth restoration, 32.1 %dental cleaning, 23.3% extractions.	
67	Fereshtehnejad	Sweden	2018		There is a marked decline in utilization once diagnosed with mixed dementia or dementia with parkinsonism due to cognitive and functional impairment. This may be due to lack of qualitative supportive care.

***Table 4**: Results.*

Key features of non- attenders

Included being of lower social class; residence in rural or remote areas; smokers; edentate; transport issues; problem only visit; cost of treatment; poor cognition and physical function; dental fear etc (Table 4).

Discussion

The authors' from their subjective personal experience have understood the following factors that may be of importance: a kind gentle caring attitude by the dental staff and the dentist; reduced waiting time; appointment time tailored to the patient's need as some have insomnia and may not appreciate a hurried early morning appointment; dental appointment can be anxiety prone to a few older adult patients therefore they must have their meal and rest before the appointment and if possible they must be accompanied by family or carer for the dental visit; regular recall visits to arouse interest in their own oral health care; motivate the children or carer to get them regularly and they must be accompanied as it boosts their morale.

This literature review has pointed towards higher social class and affluence; having dental insurance as factors of regular dental utilization on the other hand geographical location (remote/rural areas); transport issues to the dental facility; low income; perceived cost of dental treatment; poor physical function and cognition as some of the deterrents to visit a dentist. A vast array of literature has illumined a similarity in the factors that affect regular dental treatment but the ground reality is that how is this going to help to improve their frequency of regular dental visits?? There has to be evidenced based solution for these issues in order to improve the patient's quality of life.

A study done in Australia [23] elaborates on the need to untangle the concept of supply, need and utilization especially in urban and rural areas and that supply has emerged as a key component in variation in use of services [21,52]. Most of the studies on utilization of services are based on statistical analytical modelling using unambiguous indicators [23] therefore no clear formula can be developed to study the use of the services in either the rural or urban sector or public private divide in health services provision among the older adults.

Perception and organization and delivery of healthcare services in rural population- for example lack of specialist services in rural areas differs from urban population may result in different utilization patterns [23]. Insurance studies have claimed that age is a factor for irregular dental visits [54] which may be a myth as older people do not have dental insurance or inadequate dental insurance as compared to the medical insurance therefore they have a higher proportion of regular medical visits as compared to the dental visits [12].

Mobile and portable dental services may help to increase improve dental healthcare utilization in rural remote areas and urban slums [68]. This can help to provide basic dental care for example: Scaling and polishing; oral hygiene awareness; simple extractions; restoration of teeth; root canal treatment if possible; fluoride applications, ART (traumatic restorative treatment). For more complex procedures they can be transported to the dental teaching facility; government aided clinics or charitable institution clinics.

Although such programmes have financial and logistic implications nevertheless the government; charitable trusts; NGO's; dental teaching institutions can think of such outreach programmes. Dental college students, interns, postgraduate students, dental hygienists, dental nursing staff -can take part in outreach programmes like mobile dental clinics and community dental health centres which are self-functioning or as a part of medical primary healthcare centres in the urban slums and rural/ remote areas. This programme can be made mandatory as a part of the dental curriculum and it should be audited regularly for quality dental treatment for improving the patients' dental utilization pattern [69,72].

The programme must include emergency and comprehensive dental procedures so that the dental students both undergraduate and postgraduate learn more about dental service to the public first in an empathetic manner and the transport can be arranged to go to such regions where the patients can benefit from specialist services in the underserved urban, rural and remote areas.

The bottom-line is that in order to improve utilization the dental healthcare services among the older adults, the dental professionals have to reach out to the older patients' which seems more feasible and it may have a positive effect on the older patients' regular dental utilization pattern especially in the rural and remote areas; the institutionalised patients; those with poor cognition and physical function etc. More studies especially qualitative need to be considered for the feasibility of this option and the patients' feedback of the service so that it can be boosted optimally to suit their needs. The dentist if possible in our personal opinion can spare some time from their busy schedules to serve through community dental practices especially the older patients' or the underserved population that can be a rewarding experience for both.

Conclusion

As perceived earlier being of an older age group i.e. 60 years and over is not a deterrent to a regular dental visit but it appears that lack of proper transportation, income, location of the dental healthcare facility, lack of awareness of the importance of oral hygiene, cost of the dental treatment that poses as barriers for a regular dental visit amongst this age group.

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