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Investigating the barriers and solutions to geriatric oral
health treatment.

Universidade Fernando Pessoa
Faculdade de Ciências da Saúde
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Mestre em Medicina Dentária.

Sean Michael Saramago

Resumo:

A saúde oral é uma parte fundamental do bem-estar e da saúde em geral, mas muitas vezes é negligenciada particularmente nos idosos. Várias barreiras impedem os idosos de cuidar da sua saúde oral, estas podem ser atribuídas ao dentista ou ao paciente. As soluções para essas barreiras também são importantes para melhorar o quociente de saúde oral nos idosos. A literatura atual não clarifica as barreiras acima mencionadas e suas possíveis soluções. Foi realizada uma pesquisa da literatura disponível relativa a barreiras e soluções para o tratamento geriátrico da saúde oral e foi compilada uma revisão da literatura das barreiras atribuídas ao paciente, barreiras atribuídas ao dentista e soluções para essas barreiras. Muitas barreiras comuns foram destacadas e algumas soluções foram sugeridas na esperança de que uma melhor compreensão possibilite o aumento dos níveis de saúde oral nos idosos.

Palavras – chaves: Gerontologia, Barreiras, Soluções.

Abstract:

Oral health is an integral component of well being and general health but it is often times neglected particularly in the elderly. Several barriers prohibit the elderly from attending to their oral health, which can be both barriers due to the dentist or the patient. Solutions to these barriers are also important to improve the oral health quotient in the elderly. Current research does not tackle the above-mentioned barriers together with solutions. A search of the available literature pertaining to barriers and solutions to geriatric oral health treatment was conducted and a literature review summarising the barriers into barriers attributed to the patient, barriers attributed to the dentist and solutions to these barriers, was compiled. Many common barriers were highlighted and some solutions suggested in hopes that better understanding can help increase oral health levels in the elderly.

Keywords: Geriatric Dentistry, barriers, solutions.

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I. Introduction

The population dynamic is changing throughout the world, with the proportion of older individuals ever increasing. This population ageing – the increasing proportion of older individuals in the population- is set to become an impetus for social transformations in the twenty first century, with implications for many sectors of society including healthcare. According to the latest World Population Report published in 2015 by the United Nations, Department of Economic and Social Affairs, Population Division between 2015 and 2030 the number of individuals in the world aged 60 years and over is projected to grow by 56 per cent from 901 million to 1.4 billion and by 2050 this population is projected to more than double its size, as of 2015, to nearly 2.1 billion people. Further inspection within these projections reveals that globally the number of individuals aged 80 years and over is increasing at an even more alarming rate than that of older persons overall, with estimates indicating that by 2050 this age group will represent 434 million people- more than three times the value as of 2015.

This particular demographic shift will have great significance in all areas of healthcare including oral health. A greater number of elderly individuals will present for treatment, many of which may present with higher incidences of chronic conditions associated with aging such as cardiovascular diseases (Bots-VantSpijker et al., 2013). These conditions do not only require a specialised treatment approach but may also increase the risk of developing oral diseases (Bots-VantSpijker et al., 2013). Furthermore physical, cognitive and functional alterations may accumulate as an individual ages which may prove problematic in the maintenance of proper oral health, further increasing the need for oral health care (Bots-VantSpijker et al., 2013). In addition the advances in oral health care and treatment over the past few decades have resulted in a substantial increase in the proportion of individuals who not only retain their teeth until much later in life but will also present with oral implants as well as complex and sophisticated tooth- and implant-supported removable and or fixed dental prostheses, all of which will require attention and continuous need of both preventative and curative oral health care to ensure not only quality of life but also for the maintenance of general health. (Kossioni, 2012; de Baat et al., 2014; Ma & Thomson, 2014; Montini et al., 2014.)

Despite the existence of an overwhelming need for oral health treatment in the elderly population the use of professional oral healthcare services by this age group is considerably less in comparison with the use by those individuals of younger population groups (Borreani et al., 2008; Bots-VantSpijker et al., 2016). In fact the elderly age group has the lowest rate of dental visits compared with all other adults over 18 years old (Montini et al., 2014). Such non-utilisation of professional oral healthcare services is a direct result of numerous barriers the elderly population group encounters when seeking oral health care.

Current literature divides these barriers into two main groups namely: barriers attributed to the dentist and barriers attributed to the patient. Barriers attributed to the dentist include accessibility and availability, lack of appropriate facilities and services, communication and rapport, insufficient education and experience as well as insufficient reimbursement where as the barriers attributed to the patient were found to be cost of treatment, general health status, accessibility to dentists, poor oral health awareness and education and fear (Bots-VantSpijker et al., 2016; Davis & Reisine, 2015; Borreani et al., 2008; Othman et al., 2014; Montini et al., 2014; Khan et al., 2014; Schneiderman & Yellowitz, 2014; Lo & Tan, 2014; Ammanangi et al., 2012). In addition some of the literature was also found to offer possible solutions to these barriers such as alteration to dental facilities, government inclusion, cost management, fear management, improvement of communication skills from a dentist and patient perspective, introduction of oral health care delivery systems, inclusion of more geriatric oral healthcare into dental curriculum and training as well as greater patient education (Davis & Reisine, 2015; Borreani et al., 2008; Glassman & Helgeson, 2013; Othman et al., 2014; Montini; Schneiderman & Yellowitz, 2014; Lo & Tan, 2014; Ammanangi et al., 2012).

The available literature describes the barriers as a general category from either the patient or the dentist's perspective and some offer possible solutions to the barriers mentioned. Other articles focus primarily on solution models. However little research was found in which the patient and dentist barriers are given together along with solutions to these often intertwined barriers. Thus the objective of this literature review to offer a coherent account of both patient and dentist barriers to geriatric oral health treatment as well as solutions to these.

II. Development

2.1. Methodology

A literature search was carried out using the Online Knowledge Library (b-on). The search was conducted using the keywords “geriatric dentistry” and “barriers” or “solutions”. In the advanced search option the limiters selected were: full text; available in the library collection (of the University Fernando Pessoa); Publication date: 2005/01/01- 2017/03/01; selected the discipline dentistry and limited to articles published in English. The expanders were set to “search also in the full text of the articles; apply equivalent matter” and the search modes selected to “ find all my search terms’.

The search identified 708 potential articles. The titles and abstracts were screened and a publication was included if it met the following inclusion criteria: published in the period January 2005 to December 2017, published in the English language, full text available, providing oral healthcare to individuals 60 years of age or older and containing barriers to the delivery of oral health care to the elderly. Screening of the titles and abstracts when available identified 23 articles, which were suitable for further review. These 23 articles were read in full. 5 articles were excluded, as they presented no relevant data relating to geriatric oral health care and barriers or solutions. In addition 1 article was excluded, as it did not meet the inclusion criteria of age set out. 1 article was excluded as it related barriers as perceived by caregivers only and not the patients themselves, where as a further article was excluded as they presented oral healthcare and its impact on frailty, which on review had no relevance to the topic being researched. 1 article evaluated the social and healthcare systems in Europe in order to manage the general and oral health care needs of older adults and was excluded, as data extraction for the topic being researched was not possible. 1 article was excluded as it was found to be a duplicate of a previous article. A further article was excluded as it focussed on how the diseases of the mouth impact general health and thus did not fit the inclusion criteria. 1 final article was excluded as it reported barriers to domiciliary dental care set-up.

Eleven articles were selected that were found to be relevant to the study. The articles in question will be summarised and described in accordance with the three main themes

pertinent to the study namely: barriers attributed to the patient, barriers attributed to the dentist and solutions to the barriers.

2.2. Barriers attributed to the patient

Kiyak & Reichmuth (2005) highlighted that level of education and income were predictors of whether the elderly would utilize oral health care. The higher the level of education and the higher the income more attendance and attention to oral health could be found. The opposite situation presents a clear barrier to treatment. The same is true for those with combined dental and medical insurance. Place of residence and dentition status also either enable or prevent treatment being sought (Kiyak & Reichmuth, 2005). Individuals who resided in a rural setting or long-term care facilities were less likely to attend for treatment compared to their urban counterparts, and similarly those who were dentate/semi-dentate/edentulous in one arch, dentate or semi dentate in the other arch would actively seek treatment compared to those who were completely edentulous (Kiyak & Reichmuth, 2005). A psychological barrier also exists in that many elderly feel they do not have a need for oral health care, as the problems in their mouth are normal aging phenomenon (Kiyak & Reichmuth, 2005). This lack of need is further compounded in those who are socially isolated and do not have regular contact with peers or family members (Kiyak & Reichmuth., 2005).

The study conducted by Borreani et al (2008) highlighted key areas which acted as barriers in preventing elderly individuals (≥ 65 years of age) from seeking oral healthcare treatment at all or until severe symptoms developed which forced treatment to be sought out of necessity. Cost of treatment was found to be a key barrier in seeking out oral health care treatment. Many participants felt that dental charges were unaffordable. The same participants also highlighted other costs which they were exposed to namely the transportation costs. These two costs together were prohibitive particularly to those dependants on a state pension. The study also highlighted a psychological cost as participants reported they refrained from seeking any oral health care treatment, due to fear of embarrassment should the cost be above what they could afford.

Fear was also found to be the basis of the second highlighted barrier, the fear and anxiety of the potential pain related to the dental treatment. This barrier was found more among the

participants who were still dentate. The participants who highlighted fear as a barrier had reported past traumatising experiences at various stages of their life whilst undergoing dental treatment. Availability of a dentist was also seen as a barrier to seeking oral health care. Participants reported that state dentists were difficult to come by within their immediate area and as such only limited private dentists were available. This would therefore, link to the aforementioned barrier of cost and would cause the participants to refrain from seeking treatment.

Ammanagi et al. (2012) highlighted several barriers, which account for the low utilisation rate of oral health care by the elderly despite the need, however found the main barrier to be the perceived lack of need for any treatment within the elderly population. Many elderly did not prioritise nor believe oral healthcare in the absence of pain was important and would abstain from visiting the dentist. It was also apparent that transportation and access to dental practices was difficult and would hamper the elderly from seeking treatment (Ammanagi et al., 2012).

The research by Helgeson & Glassman (2013) highlighted that the main limiting factor in seeking traditional dental care was cost, particularly transportation costs. Many, even before considering treatment costs, could not afford the costs associated with arriving at a dental practice and would therefore refrain from seeking oral health care.

The article by Schneiderman & Yellowitz (2014) described the barriers relating to the elderly and seeking dental treatment under “access issues”. These were barriers that resulted in the patient not gaining access to the dentist thereby forfeiting dental treatment. “Access issues” include financial constraints, lack of awareness of the importance of oral health and lack of perceived need for treatment by the elderly and/or their caregivers as well as difficulty in travelling to and from the dental office (Schneiderman & Yellowitz, 2014).

Research by Montini et al (2014) found that there did exist a great need for oral health care in the elderly with over 90% of community dwelling older adults who participated requiring treatment. However several barriers prevented the access and utilisation of treatment. Among their study population access to oral health care was limited due to financial constraints, lack

of transportation as well as the need for assistance (with participants unable to find anyone to assist with their decreased mobility)(Montini et al., 2014).

Davis & Reisine (2015) explored the factors discouraging the use of dental care among minority elders and found cost, fear and anxiety, transportation, medical conditions, lack of interest and education as well as a perceived lack of need, all prevented individuals from attending oral health care. Many participants could not afford to attend treatment nor acquire transport and they would simply neglect treatment. As a compounding factor because they felt fearful and were unaware of the importance of good oral health they would also not attempt to find means to make treatment possible. Many participants however willing were simply unable to attend for treatment or carry out adequate oral hygiene at home, further increasing their need for treatment, due to medical conditions preventing them from doing so (Davis & Reisine, 2015). Finally a group of participants simply were not interested in attending for treatment as they felt the absence of pain meant there was no need (Davis & Reisine, 2015).

Bharti et al (2015) identified cost; accessibility and fear as the primary barriers preventing the elderly from seeking dental care. Many those identified in the study depended on a pension, unable to cover their daily needs in conjunction with dental treatment cost (Bharti et al., 2015). These participants also struggled to access a dentist due to a physical incapacity, travel related problems or a lack of dental services within their area (Bharti et al., 2015). Similarly fear and anxiety prevented elderly from seeking treatment even though the source of the fear was poorly quantified however postulated to be due to past experiences, fear of pain or equipment utilised such as needles (Bharti et al., 2015).

2.3. Barriers attributed to the dentist

Kiyak & Reichmuth (2005) draw attention to the dentist as a barrier to oral health care in the elderly as a dentist's beliefs, stereotypes and comfort level in treating the elderly may discourage this age group from using dental services.

Accessibility was reported as a barrier particularly in the participants who were part of the 75-84 and 85+ age groups, in the study conducted by Borreani et al (2008). For these individuals

it was found that mobility was difficult in both attending the appointment (as many required someone to accompany them to the appointment but often were found isolated and lacking social support) but also in accessing the facilities (participants had difficulty walking and the dental practices were either raised or ill equipped in terms of disability access) (Borreani et al, 2008). Also highlighted was the characteristic and working methods of some dentists, which prevented participants from seeking oral health care. Participants reported that those who were dealt with by dentists who were able to communicate in a polite, professional manner felt more inclined to return where as those who were dealt with by a brash dentist would be hesitant to return for treatment.

As per Ammanagi et al. (2012), several dentists are fearful of treating geriatric patients due to the relative lack of experience in treating the elderly but also due to the often complicated (potentially life threatening) conditions elderly patients may present with and the often times debilitating conditions associated with aging. This may leave dentists with the very real possibility of having a patient experience an adverse reaction while undergoing treatment and they may shy away from treating these individuals.

Similarly Helgeson & Glassman (2013) found that a common barrier to treatment presented in the medical history review. After the medical history was taken it became clear that prior to treatment many elderly patients required a medical consultation or an alteration to their medication, with the dentist often being unable to contact the patient's attending physician during the visit. As such patients would have to postpone their treatment until an appointment could be found with their physician and this frustration of a lack in communication between the two practitioners and constantly having to postpone returning at a later date would deter the elderly patient from returning (Helgeson & Glassman, 2013). It was also found that written and verbal communication both before and after dental visits were inadequate especially for those who required accompaniment to the appointment (Helgeson and Glassman, 2013). This would lead to incomplete dental care and lack of follow-up, as vital postoperative instructions and future appointment dates were lost in communication.

Schneiderman & Yellowitz (2014) also found that many dentists feel either inadequately prepared or are unwilling to provide dental care for the elderly population. This is a barrier, which was found to stem from undergraduate level to qualified dentists.

This was further emphasised in the article by Ma & Thomson (2014) who reported limited knowledge as well as negative stereotypes many dentists had concerning geriatric patients. Added to this was the fact that several dentists felt treating such patients, particularly those in long term care facilities provided minimal financial gain (Ma & Thomson, 2014). These factors further distance dentists from these patients.

Bharti et al (2015) found that a poor attitude towards the elderly, poor confidence in treating the elderly, poorly designed dental surgeries and financial remuneration were barriers on part of the dentist preventing the elderly from seeking treatment. Dentists who are brash and insensitive commonly isolate elderly patients seeking treatment as is similarly seen with surgery designs, which do not incorporate easy access for those with limited mobility. A lack of training in gerodontology and the various drug interactions, which must be taken into consideration in a multi medicated elderly patient, are off putting to the dentist. Fees particularly for domiciliary care as well as the more traditional procedures are seen as not justifiable for the time invested.

The cross-sectional qualitative study conducted by Davis & Reisine (2015) found that some dentists did not explain the procedures carried in a manner accessible to the patient and proceeded in a manner, which was rude with little compassion. In combination this would lead to the patient being very hesitant to return for treatment or follow-up and as such act as a psychological impetus preventing them from regular oral health care.

The study carried out by Bots-VantSpijker et al. (2016) focussed exclusively on the barriers in providing oral health care according to dentists and found that several participants reported a lack of knowledge in relation to interactions and adverse reactions of medication the elderly may be taking, predisposing them to refrain from treating these patients. This can also be attributed to a lack of training and exposure to these patients during their formative years in dental school. It was also mentioned that insufficient reimbursement for providing oral health care caused hesitancy amongst dentists to treat the elderly.

2.4 Solutions

Whilst not offering concrete solutions to address these barriers Kiyak and Reichmuth (2005) highlight that some of the current barriers should disappear with the some of the coming generations who are more educated, have higher levels of income and opt for dental insurance coverage compared to the elderly of today. Yet Kiyak and Reichmuth (2005) still maintain it is incorrect to assume every member of the coming generations will be exposed to these levels of greater education and financial freedom and as such suggests community- based health promotion drives, with a clear oral health message as well as integrating a clinical component in treating the elderly into a dentist's continuing professional education may yield results in decreasing the aforementioned barriers. A final suggestion is made in adopting an interdisciplinary approach providing basic oral health training to physicians, nurses, pharmacists and nutritionists would assisting in greater exposure to the need for proper oral health care in the elderly (Kiyak and Reichmuth, 2005).

Borreani et al. (2008) provided solutions to key barriers highlighted in their study. It was suggested that dentists should provide clear and simple information regarding all current and prospective costs before treatment and always address the elderly patient in a warm and welcoming manner. This promotes a positive image of dentistry and along with provision of ear plugs or silent drills would decrease the presence of external stimuli contributing to fear. Appointments should also be scheduled to allow for adequate time for better communication. Where possible it was also highlighted that effort should be made to make all practices physically accessible. Reduced treatment fees for the elderly in addition to greater governmental financial support for dental care in the elderly were also emphasised, including the possibility of funding for domiciliary care based on need. In addition a more integrated inter-disciplinary approach should be adopted in which educational information regarding the importance of oral health care is available at all general health facilities both private and public. This education should also extend to the training of dentists who should have greater training in caring for the elderly in both an undergraduate, postgraduate and continued professional development setting.

According to Ammanagi et al. (2012) to increase utilisation of oral health care by the elderly three approaches are key: increase dentist education, improve equipment and facilities and

making the media stakeholders in oral health. Dentists should dedicate a scope of their continued professional development to the treatment of and communication with both the elderly and their caregivers or family members to ensure the message of proper oral health care is enforced. Consideration should also be given in ensuring each practice is set up with access, furniture, lighting and signage, which facilitate the dental visit for the elderly patient (Ammanagi et al., 2012). Media should also play an active role by including the importance of oral self-care and treatment in promotional, print and digital campaigns (Ammanagi et al., 2012). This offers the potential for far reaching exposure due to the ever-increasing presence and availability of the media and information in everyday life.

Helgeson & Glassman (2013) further acknowledge that the elderly are unable to access dental treatment to the same degree as younger age groups and suggest the solution lies in moving away from a dental care system which is primarily reactive where patients present when a problem arises to a system which is pre-emptive and proactive in nature (Helgeson & Glassman, 2013). In doing so it is hoped the traditional barriers are addressed and often times by passed before there is an urgent need for treatment. It is proposed that a community- based oral health delivery system where education and simple services are given in a community setting, incorporating the latest technology to link both dental and medical practitioners with members of the community (Helgeson & Glassman, 2013). Such proactive systems should have the following guidelines to provide optimal treatment and increase patient compliance: be patient centred, focus on early detection, implement evidence- based treatment, be geographically distributed to where patients congregate, must be collaborative between dentists, doctors and nurses, and must incorporate year round access. This system would allow oral health care to approach the patient rather than the patient seeking out treatment, and in doing so negate all possible barriers.

In the article by Lo & Tan (2014) emphasis is placed on communication for successful implementation and execution of oral health care services for elders. A new concept of oral health literacy is given in which communication with an elderly patient should be done in a manner tailored to the patient using proficient language whilst still taking into account the individuals capacity to acquire and process the information to allow for an informed decision. This communication model would engage the patient fostering a better relationship between themselves and the dentist ultimately leading to successful treatment and greater compliance.

To address the barriers arising from the dentist's part, Schneiderman & Yellowitz (2014) suggest a greater clinical educational experience in geriatric dental care is necessary, as this has been demonstrated to be an effective method in providing dentists with greater confidence in treating the elderly. This greater confidence would also be an foster increased willingness. According to the authors this is a crucial step as the current dental training programs place little emphasis on treating the elderly (Schneiderman and Yellowitz, 2014).

Similarly Ma & Thomson (2014) suggest greater focus should be given to dentists via a two-pronged approach focussing on both new entrants to the profession via dental schools as well as established dentists through continuing professional development and greater access to post graduate education and training in geriatric care. This should be provided by clinical educational programmes, which are overseen and guided thereby allowing students to acquire comfort in treating elderly patients in a dental practice setting (Ma and Thomson, 2014).

To the barriers found in the study by Montini et al (2014) the proposal to solve these was to increase communication between local agencies and social services as well as local dental schools to regulate free dental screenings and establish a referral system to the local dental school clinic. In addition these same agencies should coordinate with governmental transportation to facilitate the transportation of those in need of treatment (Montini et al., 2014).

Bharti et al (2015) suggest dental surgeries be enhanced to accommodate the elderly patient. This includes making an accessible, welcoming environment. In addition a greater level of geriatric dental education incorporating knowledge on the physiology, anatomy and pharmacology of aging as well as skills and attitudes fostering compassion and empathy should be offered to all professionals. Greater attention should also be given to improving communication skills and increasing the circulation of informative materials in all forms of media to encourage regular attendance. Finally greater participation in terms of government investment and policy would go a long way in alleviating the oral disease burden in the elderly (Bharti et al., 2015).

Davis & Reisine (2015) proposed that dentists should consider means to take treatment to those in need instead of the traditional model of a patient attending the dental practice. Although difficult, methods do exist (mobile dental clinics) which make such an option feasible. It was also encouraged that dentists from all realms of healthcare re-emphasise the need for proper oral care in maintaining good general health, whilst simultaneously fostering a personal relationship with the patients to ensure they are more at ease to attend treatment (Davis & Reisine, 2015).

2.5 Table 1- Findings of Reviewed Articles

Article Title	Authors	Year	Barriers attributed to the patient	Barriers attributed to the dentist	Solutions
Barriers to and Enablers of Older Adults' Use of Dental Services	H. Asuman Kiyak Marisa Reichmuth	2005	<ul style="list-style-type: none"> • Level of Education • Place of Residence (urban vs. rural) • Social Isolation • Feel no need for treatment 	<ul style="list-style-type: none"> • Dentist's beliefs, stereotypes and comfort level in treating the elderly 	<ul style="list-style-type: none"> • Time: some barriers disappear in next generations. • Community based health promotion drives. • Geriatric continued professional education <ul style="list-style-type: none"> • Interdisciplinary approach
Minimising barriers to dental care in older people	Elena Borreani Desmond Wright Sasha Scambler Jennifer E Gallagher	2008	<ul style="list-style-type: none"> • Cost • Fear • Availability 	<ul style="list-style-type: none"> • Accessibility • Poor Attitude 	<ul style="list-style-type: none"> • Better communication in a warm and welcoming manner • Decrease fear due to external stimuli <ul style="list-style-type: none"> • Precise appointments • Reduced fees: elderly • Increased government support <ul style="list-style-type: none"> • Interdisciplinary approach • Increased public education • Increased undergraduate, post-graduate and continued professional development training.
Geriatric dentistry – meet the need	Rakhi Issrani Renuka Ammanagi Vaishali Keluskar	2012	<ul style="list-style-type: none"> • Feel no need for treatment • Availability • Transport 	<ul style="list-style-type: none"> • Lack of experience in treating elderly • Complicated medical history 	<ul style="list-style-type: none"> • Increase education • Improve facilities and equipment • Increase media participation
Oral health delivery systems for older adults and people with disabilities	Michael Helgeson Paul Glassman	2013	<ul style="list-style-type: none"> • Cost 	<ul style="list-style-type: none"> • Complicated medical history • Poor communication 	<ul style="list-style-type: none"> • Proactive, pre-emptive dental care approach. • Development of community based oral health systems. • Integrated interdisciplinary approach
Elder's oral health crisis	Janet A. Yellowitz, MaryAnn T. Schneiderman	2014	<ul style="list-style-type: none"> • Cost • Feel no need for treatment • Not aware importance of OH • Transport 	<ul style="list-style-type: none"> • Feel inadequately prepared to treat elderly • Unwilling to treat 	<ul style="list-style-type: none"> • Increase clinical exposure to elderly patients
Barriers to Dental Services for Older Adults	Theresa Montini Tuo-Yen Tseng Helly Patel Donna Shelley	2014	<ul style="list-style-type: none"> • Cost • Transport • Need assistance 	None Provided	<ul style="list-style-type: none"> • Approach social services and local dental schools to provide transport and treatment.
An ageing population poses dental challenges William	William Murray Thomson Sunyoung Ma	2014	None Provided	<ul style="list-style-type: none"> • Limited knowledge in treating elderly • Financial remuneration 	<ul style="list-style-type: none"> • Increase undergraduate training in geriatric dentistry • Increase continued professional development in geriatric dentistry
Cultural challenges to oral healthcare implementation in elders	Edward C.M. Lo Hai P. Tan	2014	None Provided	None Provided	<ul style="list-style-type: none"> • Concept of oral health literacy

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Oral care needs, barriers and challenges among elderly in India	Ramesh Bharti Anil Chandra Aseem Prakash Tikku Deeksha Arya Richa Gupta	2015	<ul style="list-style-type: none"> • Cost • Availability • Physical impairment <ul style="list-style-type: none"> • Transport • Fear and anxiety 	<ul style="list-style-type: none"> • Poor attitude • Low confidence in treating elderly • Lack of training in treating elderly • Poorly designed surgery • Financial remuneration 	<ul style="list-style-type: none"> • Improve surgery design • Increase public education • Increase geriatric dental training and education <ul style="list-style-type: none"> • Improve communication • Increase media participation • Increase government investment
Barriers to dental care for older minority adults	Demetress L. Davis Susan Reisine,	2015	<ul style="list-style-type: none"> • Cost • Fear & anxiety • No interest • Level of education • Not aware importance of OH • Feel no need for treatment <ul style="list-style-type: none"> • Transportation • Medical conditions 	<ul style="list-style-type: none"> • Poor attitude 	<ul style="list-style-type: none"> • Mobilise dental services • Increase public education • Improve patient/dentist rapport.
Opinions of dentists on the barriers in providing oral health care to community-dwelling frail older people: a questionnaire survey	Pieterella C. Bots-VantSpijker1, Josef J.M. Bruers Casper P. Bots, Jacques N.O. Vanobbergen Luc M.J. De Visschere Cees de Baat Jos M.G.A. Schols	2016	None Provided	<ul style="list-style-type: none"> • Limited knowledge drug reactions • Limited training and exposure to elderly patients • Financial remuneration 	None Provided
Barriers to Dental Services for Older Adults	Theresa Montini Tuo-Yen Tseng Helly Patel Donna Shelley	2014	<ul style="list-style-type: none"> • Cost • Transport • Need assistance 	None Provided	<ul style="list-style-type: none"> • Approach social services and local dental schools to provide transport and treatment.

III. Discussion

Several barriers were found in the literature, many of which were recurring from article to article. While some barriers were unique, it is the common recurring ones, which seem to affect a broader sample of the population and as such should they be addressed adequately an improvement in the oral health status in the elderly can be expected.

Cost was the most common barrier to the patient and was highlighted in 50% of the studies reviewed. This referred to the cost of treatment and the secondary costs involved in attending the appointment as well as any follow up necessary. These costs in total were found to be restrictive in terms of individuals seeking treatment as many of the elders depended solely on a state pension, which could not cover their daily needs together with their dental treatment costs. Only the article by Borreani et al (2008) offered a possible solution to the cost conundrum in suggesting a reduced fee for the elderly however it is the author's opinion that a blanket reduction in fees may be unattainable. Oral health role players including dentists and the government should consider manners in which to lessen the burden of cost by for

example instituting a pensioners oral health benefit or instilling a reduced tariff for pensioners particularly for consultation and prophylaxis visits.

Transport was also lighted in 45% of the reviewed literature as being a barrier. Many of the elderly study population could not find means to attend dental appointments thereby forfeiting the treatment. This can most definitely be related to cost but may also be partly due to the limitations particularly on self-dependence and mobility age places on an individual. Glassman and Helgeson (2013) propose a novel idea in the establishment of community based oral health systems where as Davis and Reisine (2015) advocate the operation of mobile dental clinics to bring treatment to the patients however both options may be prohibitive from a cost and logistics standpoint. This is further worsened by the lack of availability of dentists related in 27% of the research, however such a conclusion being drawn from questionnaire-based research may not account for the participants simply being unfamiliar with the dental services in their area. Further research is warranted into strategies to bridge this divide between willing patient and distant treatment.

One area that should be looked upon as the entry point into breaking down these oral health barriers is the misinformation on the part of the patient. 36% of the reviewed literature reported that many participants felt there was no need for maintenance of good oral health and 18% of the literature reported that the participants were unaware that dental check-ups were necessary. It is fundamental to change this viewpoint and as the articles have suggested increasing patient education on every level is crucial to eliminating this barrier. Media, government policies and dentists in their interactions with patients should address and re-emphasise the importance of oral health in holistic health.

Fear was commonly cited as a main reason for avoiding dental treatment. It is imperative even in the elderly to make the dental visit as pleasant and pain free as possible to prevent negative experiences, which may provoke a fearful reaction in the future. Dentists should attempt to incorporate relaxation techniques, potentially consider anxiolytics when not contra indicated, administer proper anaesthesia and as mentioned in the article by Borreani et al (2008) reduce all external stimuli which may illicit a fearful reaction, particularly when faced by an anxious patient.

Dentists themselves must also become more adaptable and change their approach to geriatric dentistry to improve its current situation. 54% of the reviewed literature reported that dentists did not feel adequately comfortable or prepared to treat a geriatric patient for a variety of reasons including the complexity of treating a patient who is on a host of medication. As the literature suggests a geriatric dentistry component should be enforced in all dental schools beginning at the undergraduate level, extending into post-graduate training and being offered as part of a dentists continued professional development to ensure that elderly patients can be treated with confidence to the highest of standards. In addition ensuring that each elderly patient is treated in conjunction with his or her family doctor (thereby adopting an interdisciplinary approach) may alleviate and facilitate the treatment of individuals heavily medicated.

Communication and demeanour is also vital in tackling the abstinence from treatment by the elderly as a poor attitude from the part of the dentist was cited in the research by Kiyak & Reichmuth (2005), Borreani et al (2008), Glassman & Helgeson (2013), Bharti et al (2015) and Davis & Reisine (2015) as being a contributing factor. Dentists should maintain a friendly and professional attitude in dealing with all their patients and must realise that in certain circumstances an elderly patient may require more time per appointment. This must be taken into account accordingly to prevent frustration from the part of the dentist and prevent an abrupt uncaring attitude being conveyed. Such communication skills and development should also be incorporated into the dental curriculum. Where possible the dentist should also ensure that his or her surgery should be as accommodating as possible for patients with limited mobility to facilitate the entry, treatment and exit of the patient. This would ensure every patient is able to access treatment, and address the barrier of inaccessibility found in 18% of the reviewed literature.

Finally poor financial remuneration is mentioned in 27% of the reviewed literature as being a factor as to why dentists stray away from treating the elderly however this applies to the provision of domiciliary care, which is at times costly and impractical to the dentist. Whilst this may be understandable the dental professional should always remember the Hippocratic oath taken and place the patient's well being before financial gain.

IV. Conclusion

The elderly population is a demographic which is growing at an accelerated pace. With the advancements in medicine, individuals will live longer and the dental treatment of the elderly patient will be even more present in dental practice. However a variety of barriers both as a result of the patient and the dentist exist which prohibit elderly patients from accessing dental care and these must be investigated, analysed and addressed to ensure that oral health care is maintained in the later years in life.

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