The challenge of oral health for all: a manifesto on complete removable dental prostheses

Oral health for all remains a global public health challenge, with extreme disparities primarily affecting marginalized populations. Demographic shifts, economic changes, and rising education levels have increased the demand for restorative treatment, yet there are persistent and growing barriers in the neglected patient population. A critical shortage of practitioners and caregivers leaves vulnerable groups – particularly the old-old elderly, children with disabilities, and adults requiring special care – without adequate treatment. This crisis raises ethical dilemmas, such as when optimal care is not feasible is it better to provide suboptimal treatment or none at all?

The demographic aspect

The World Health Organization projects that the global population over 60 will double from 11% in 2000 to 22% by 2050, reaching 1.7 billion in developing countries.[1] The old-old (75+) population will see significant growth. In Europe, elderly populations are notably high: Germany (22.1%), France (21.2%), Italy (24%), and Spain (20.1%).[2] Africa is also aging, though more slowly, with 5.6% over 60.[3] Retirement further impacts aging, often leading to increased dependence as social status shifts.

Barriers to oral treatment for elderly and special needs patients

Several complex factors limit access to oral treatment. Aging brings health challenges, including chronic diseases, depression, and dental anxiety. Ageism – discrimination based on age – has become institutionalized in some countries, leaving older adults neglected.

Time perception changes with age, and treating elderly or old-old patients requires a different pace than treating younger adults.

The income of the elderly population is on average less than the younger population. In 2022, the national poverty rate of people aged 65 and over was 10.9%, with geographic variations from 7.5% to 15.9%.[4]

In some countries there are national systems offering dental treatment finance by treatment or by capita. Classic insurance (private or public), where it exists, reimburses for treatment – partially or totally. Universal Health Coverage is the solution, but it will take time to implement this globally.

In many countries there are not enough dentist and auxiliary teams to provide even a minimal oral health care service. Some of the teams have inadequate training and skills. Providing high-quality oral health care for elderly and special needs patients requires practitioners trained for this challenge.[2]

Geriatric dentistry or gerodontology in general is not taught in every institution. In continuing dental education, gerodontology is often not part of the syllabus. Even where an official and mandatory continuing education exists, very few courses are devoted to this subject.[3]

An expert opinion from the European College of Gerodontology mentioned that one of the barriers is the lack of professional support including limited training in caring for frail and care-dependent elders.[5]

So, the need is high, the patients are many, but the resources – financial and professional – are meagre. Currently there are two alternatives regarding complete removable dental prostheses: conventional and digital dentures.

Conventional dentures

The methodology of constructing conventional dentures was established in the 1930s and 1940s. Recent textbooks have advocated few changes.[6]

The manufacturing of conventional dentures is time consuming; the prosthetic protocol takes around eight sessions. Some steps are dogmatic, like registering the hinge rotation axis, or the use of a facebow for transmission to a semi-"precision" articulator. These articulators are not precise and are not able to reproduce the real individual chewing function, since each patient has a nonsymmetrical pattern. The orientation plane is a skeletal reference presented by Camper.[7] This plane is not involved in the function of the tongue, a major actor in

Table 1 The 5–7 sessions of the proposed simple functional clinical method

Session	Details
1	Acrylic stock trays are prepared. A first impression is realized with a putty, a second layer with a wash will register the anatomy. Realize the mandibular impression with the maxillary impression in place, with a normal distance between the two trays. After the evaluation of the freeway space, a correct vertical dimension of occlusion is recorded with two wax rims or classic putty product. The use of a facebow is not common anymore.[9] Note, this may be a long session. Discuss the shade and size of teeth.
2	The dental technician prepares two pink provisional bases from self-curing acryl. The anterior maxillary teeth from the second premolar to second premolar (teeth 15 to 25) are mounted. On the posterior sides two occlusal rims are placed. On the mandibular base a classic wax rim is performed with the same form and height as the impression. After checking the freeway space (3–4 mm); the centric occlusion is registered. Esthetics are approved and the final wash is realized under occlusal pressure.
3	Necessary corrections, if needed.
4	Delivery of the dentures: In silence start with the maxillary denture, maintaining it with your fingers. Then introduce the mandibular denture, avoiding mouth closure by placing a cotton roll between the two arches. Start occlusal balance performance.[10]
5	2 to 3 follow-up sessions.

chewing. In general, these dogmas were the result of investigations on 45- to 50-year-old patients. Nowadays, edentulism tends to occur by 70 to 75 years of age, and there has been a tremendous change with aging in terms of anatomy and physiology in the elderly population.

Digital dentures

The profession is witnessing the fantastic development of digital devices, such as CAD/CAM. As in many technical evolutions, this increases the treatment cost, prohibiting its utilization for many dental practices.[8] Costs are slowly reducing as dental practitioners adapt to high-tech digital dentistry.

It is not yet possible to manufacture complete dentures by the digital method only. At present, three sessions are needed:

1. A digital record of the jaws is made, and a custom tray is printed.
2. A muco-dynamic impression is taken. The impression is digitized. The dentures are milled or printed.
3. Delivery of the dentures.

The advantages are fewer appointments and adjustments, individualization options, increased comfort, better bite and fit, and a quick and simple replacement process if lost. The disadvantages are that rebasing and relining are problematic in the milled material, and the high cost. There are no significant differences in the satisfaction of the patients. In the future, when dentures can be printed, the first disadvantage will be solved. The prices of the equipment will also reduce. There is yet no digital solution for the muco-dynamic impression.

Therefore, the conventional method is no longer feasible, but the digital method is not yet feasible. To overcome at least some of the barriers for providing complete dentures for all those who need them, a simple and functional solution is needed for the general dental practitioner, since they treat the great majority of patients. The skills and techniques needed should be acquirable in the continuing education system.

Proposal of a third option

We propose a simple, functional, clinical method, with around five to seven sessions in total. The stages are detailed in Table 1.

The advantages are fewer sessions, more adapted to the aging of the patients, taking into consideration the function of the tongue and of the peripheral muscles and the neutral zone. The proposed simplified method for complete denture preparation offers a shorter chair-time, low-cost dental products, and a quick collaboration with the dental technician. For the general dental practitioner, it is easy to learn this method in continuing education seminars.

This method allows an acceptable treatment for a significant group of neglected and vulnerable patients, and can be part of the solution to meeting the global oral health challenge.

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Alexandre Mersel
Deceased. Former Director of the FDI Euro Continuing Education Program, Department of Community Dentistry, Hebrew University – Hadassah Faculty of Dental Medicine, Jerusalem, Israel

Shlomo Paul Zusman
DMD, MSc(DPH), MPA, DDPH.RCS
Former Chief Dental Officer of Israel
Specialist in Dental Public Health
Adjunct Associate Professor in Public Health Sciences, University of Rochester, Rochester, NY, USA. Email: zusmans@gmail.com

Alexandre Mersel

Shlomo P. Zusman

Professor Alexandre Mersel (1936–2024)

Professor Alex Mersel was a world expert in gerodontology and prosthodontics. I knew him from the time he arrived in Israel in 1970 from Strasbourg, France. From the very first it was clear that he was devoted to gerodontics with an emphasis on public health. This combination was unique at that time, especially in Israel where very few dentists took an interest in the treatment of older people. His whole career focused on the dental care of this so-important and in some way neglected population. Prof Mersel was an icon in the practice and treatment of these patients, and his research was driven by his interest in public health services for the elderly population in Israel and across the world. He was Director of the Continuing Education Program in Eastern Europe for the World Dental Federation, and served as a founder and as an acting chair of the Yad Sarah Geriatric Dental Clinic, providing social and health services particularly for the elderly population, and tutoring new generations of dentists in the field. He held a Professor position at the University of Paris V from 1995 to 2005, and was an Associate Professor at the Faculty of Dental Medicine at the Hebrew University. He was a recipient of the Silver Medal of the Municipality of Paris.

Prof Mersel will be remembered as a pioneer in gerodontics, a teacher, a researcher, and a contributor to the dental world, and will be missed by students and colleagues.

Jonathan Mann, DMD, MSc
Former Dean, School of Dental Medicine, The Hebrew University