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The use of removable dentures in different age periods

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ABSTRACT. Introduction. Removable dentures are aesthetic and hygienic; they can be used in patients who have lost from one to all natural teeth in each jaw. Despite extensive research on the use of removable dentures, the frequency of their use among people in different age groups remains unknown. **The aim of the study** was to investigate the frequency of removable denture use among patients in different age groups. **Materials and methods.** A clinical study examined 2,831 individuals (1,282 men (45.28%) and 1,549 women (54.72%)) aged 15 to 96 years who sought dental care at municipal or departmental dental healthcare facilities. Age grouping followed the World Health Organization's age periodization recommended for use in 2025. During the medical history collection and dental examination, patients were asked whether they used removable dentures – partial or complete. The materials used to manufacture the dentures were not specified. **Results.** The study found that removable dentures are widely used across various age groups. In late adolescence, removable dentures are used due to impossibility of fabricating fixed dentures or implant-supported prostheses because of ongoing jaw growth. Among young, middle-aged, and elderly individuals, removable dentures were used by 23.89, 70.36 and 89.25% of patients, respectively. Among centenarians, the usage rate reached 93.33%. The main reasons for the widespread use of removable dentures include their relatively low cost and the possibility for privileged categories of citizens to receive them free of charge in public healthcare facilities through budgetary funding. **Conclusion.** The widespread use of removable dentures in modern healthcare practice across different age groups necessitates the search for new inert materials for denture bases, as well as adhesive agents that reduce the likelihood of inflammatory complications in the denture-bearing area when using partial or complete removable dentures.

KEYWORDS: people in different age groups, removable denture, frequency of removable denture use, young adults, middle-aged adults, older adults, centenarians, reasons for removable denture use

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Использование съемных зубных протезов в разные возрастные периоды

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РЕЗЮМЕ. Введение. Съемные зубные протезы эстетичны, гигиеничны и их можно применять у пациентов, которые имеют потерю естественных зубов от одного до всех на каждой из челюстей. Несмотря на многостороннее изучение проблемы пользования съемными зубными протезами, до сих пор неизвестна частота их применения у людей разных возрастных групп. **Цель исследования** — изучить частоту применения пациентами разных возрастных групп съемных зубных протезов. **Материалы и методы.** В ходе клинического исследования были осмотрены 2831 (1282 (45,28%) мужчин и 1549 (54,72%) женщин) человек в возрасте от 15 до 96 лет, которые обращались в муниципальные или ведомственные стоматологические медицинские организации для оказания всех видов стоматологической медицинской помощи. Для распределения пациентов на группы исследования использована возрастная периодизация Всемирной организации здравоохранения, рекомендованная к применению в 2025 г. При сборе анамнеза и стоматологическом осмотре пациентов выясняли, пользуются ли пациенты съемными зубными протезами (частичными или полными съемными). При этом не уточняли материал, из которого они были изготовлены. **Результаты.** Установлено, что съемные зубные протезы широко применяются у пациентов различных возрастных групп. В позднем юношеском возрасте съемные зубные протезы применяют в связи с невозможностью изготовления несъемных зубных протезов или имплантационных протезов из-за продолжающегося роста челюстей. Среди людей молодого, зрелого и старческого возраста съемными зубными протезами пользовались 23,89, 70,36 и 89,25% пациентов соответственно. Долгожители использовали съемные зубные протезы в 93,33% случаев. Основной причиной широкого применения съемных зубных протезов являются их сравнительно низкая стоимость, а также возможность льготной категории граждан получить их в государственных медицинских организациях за счет средств бюджета. **Заключение.** Широкое применение съемных зубных протезов в современном практическом здравоохранении у людей разных возрастных групп диктует поиск новых инертных материалов для базисов протезов, а также адгезивных средств, снижающих вероятность возникновения воспалительных осложнений протезного ложа при пользовании частичными или полными съемными зубными протезами.

КЛЮЧЕВЫЕ СЛОВА: люди разных возрастных групп, съемный зубной протез, частота применения съемных зубных протезов, люди молодого возраста, зрелые люди, люди старших возрастных групп, долгожители, причины применения съемных зубных протезов

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INTRODUCTION

The disadvantages of removable dentures are well recognised today, the principal ones being poor restoration of masticatory function and the occurrence of inflammatory changes in the oral mucosa beneath the denture base [1, 2]. At the same time, removable dentures have advantages that allow them to remain in use in broad dental practice, both in the Russian Federation and internationally [3, 4]. Removable dentures are aesthetic, hygienic, and can be applied in patients with the loss of natural teeth ranging from a single tooth to all teeth in each jaw [5]. In addition, for eligible groups of citizens of the Russian Federation, including pensioners, removable dentures are provided in state (municipal, departmental) healthcare organizations at the expense of the budget [6]. Despite the extensive study of the problem of removable denture use, the frequency of their application in people of different age groups remains unknown to date.

AIM

The aim of this study was to investigate the frequency of removable denture use in patients of different age groups.

MATERIALS AND METHODS

To achieve the stated aim, a single-center, prospective, clinical dental study was carried out. A total of 2831 patients (1282 (45.28%) men and 1549 (54.72%) women) aged 15 to 96 years were examined. All patients attended municipal or departmental dental healthcare organizations to receive various types of dental care, including surgical, therapeutic, orthopedic, and orthodontic treatment. The World Health Organization (WHO) age periodization, recommended for adoption on 15 March 2025, was used to allocate the patients into the study groups (Fig. 1). In accordance with this age periodization, the following groups were identified: late adolescence (15–24 years), young age (25–59 years), mature age (60–74 years), old age (75–90 years), and long-livers (over 90 years).

The late adolescence group comprised 337 individuals (11.90%; 220 men and 117 women). At the time of the examination, there were 1130 indi-



Fig. 1. Distribution of patients by age and gender, persons (the figure is prepared by the authors using their own data)

Рис. 1. Распределение пациентов по возрасту и полу, человек (рисунок подготовлен авторами по собственным данным)

viduals (39.92%; 474 men and 656 women) in the young age group. In the mature age group, 884 individuals (31.23%; 396 men and 488 women) were examined. The old age group consisted of 465 individuals (16.43%; 189 men and 276 women). Among the 15 long-livers (0.52%), there were 3 men and 12 women.

During history-taking and the dental examination of the patients, it was determined whether the patients used partial or complete removable dentures. The material from which they were fabricated was not specified.

The study fully complied with the ethical standards set forth in the Declaration of Helsinki of 1975 and its revision of 2000.

For all statistical analysis procedures, the attained significance level (p) was evaluated, with the critical significance level set at 0.05.

RESULTS

The study established that, among patients in the late adolescence period, removable dentures were used by 6 (1.78%) individuals, of whom 2 (0.91%) were men and 4 (3.42%) were women. It is noteworthy that in all cases these were removable maxillary dentures that replaced a defect of the dental arch involving the

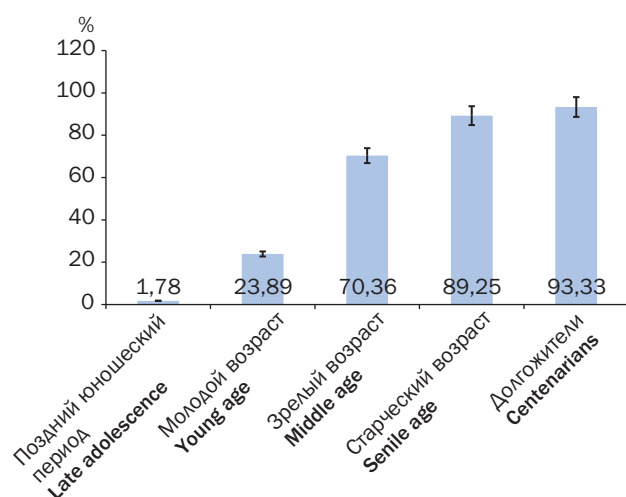


Fig. 2. The frequency of using removable dentures among people of different age groups, % (the figure is prepared by the authors using their own data)

Рис. 2. Частота пользования съёмными зубными протезами у людей разных возрастных групп, % (рисунок подготовлен авторами по собственным данным)

premolars and anterior teeth. Thus, they served to correct an aesthetic defect and not merely to restore the continuity of the maxillary dental arch.

In people of young age (25–59 years), the prevalence of removable denture use rose to 23.89% (270 individuals). Within this age group, removable dentures were used by 43 (9.07%) men and 227 (34.6%) women. Removable dentures were used most often by people of mature age, old age, and long-livers (Fig. 2).

Among patients of mature age (60–74 years), removable dentures were used by 70.36% (622 individuals), of whom 205 (51.77%) were men and 417 (85.45%) were women. A similar trend was noted among people of old age, of whom 89.25% (415 individuals) used removable dentures, including 162 (85.71%) men and 253 (91.67%) women. Among long-livers (over 90 years), removable dentures were used by 14 (93.33%) individuals, of whom 2 (66.67%) were men and 12 (100.0%) were women. Thus, of all 2831 individuals examined, 46.87% used removable dentures, that is, 1327 people.

DISCUSSION

The clinical study established that women use partial and complete removable dentures more often, which aligns with earlier reports [7,

8]. With advancing age, the frequency of denture use rose, reaching 93.3% in long-livers. It is worth noting that, in the late adolescence period, the use of removable dentures was driven by the impossibility of placing fixed dentures on dental implants because of incomplete jaw formation (growth). In young, mature, and old age, the principal reason for using removable dentures was economic: these dentures are relatively inexpensive. For eligible groups of citizens, they were provided at the expense of the budget, that is, free of charge to the patient. It is also important to highlight the following difference. In people of young and mature age, removable dentures largely required no adjustment or restoration and were in a satisfactory hygienic state. By contrast, in people of old age and long-livers, the majority of dentures needed replacement, as many of them had been in use for longer than 5 years. In older age groups, the denture bases frequently failed to fit the tissues of the denture-bearing area, causing food to become trapped under the dentures and leading to chronic inflammation of the oral mucosa (denture stomatitis).

CONCLUSION

In summary, it can be concluded that removable dentures are widely used in patients across various age groups. In the late adolescence period, the primary reason for using removable dentures is medical indications stemming from the inability to fabricate fixed structures or implant-supported prostheses because of ongoing jaw growth. By contrast, in people of young, mature, and old age, as well as long-livers, the main reason for their widespread application (ranging from 23.89% to 93.33% of cases) lies in the financial capacity to restore the integrity of the dental arches with comparatively inexpensive removable dentures. An additional factor is the opportunity for eligible categories of citizens to obtain them in state healthcare organizations at the expense of the budget. Considering the extensive use of removable dentures in modern practical healthcare, the search for new inert materials for denture bases is of great importance. Equally important is the development of adhesive agents that reduce the risk of inflammatory complications of the denture-bearing area associated with the use of partial or complete removable dentures.

ADDITIONAL INFORMATION

Authors' contribution. All authors made a substantial contribution to the conception of the study, acquisition, analysis, interpretation of data for the work, drafting and revising the article, final approval of the version to be published and agree to be accountable for all aspects of the study.

Competing interests. The authors declare that they have no competing interests.

Consent for publication. Written consent was obtained from the patient for publication of relevant medical information within the manuscript.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

Вклад авторов. Все авторы внесли существенный вклад в разработку концепции, проведение исследования и подготовку статьи, прочли и одобрили финальную версию перед публикацией.

Конфликт интересов. Авторы декларируют отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

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