Faculty of Health Sciences
Department of Community Medicine

Oral health in Russian young adults

A study on determinants of dental health, dental anxiety, and oral health-related quality of life in medical and dental students in North-West Russia

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Sergei N. Drachev

A dissertation for the degree of Philosophiae Doctor – March 2019

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Preface

I am a dentist, and in 2002 I graduated with honours from the Northern State Medical University (NSMU), Arkhangelsk, North-West Russia. After graduating from the Dental Faculty, I completed an internship in dentistry, then a clinical residency at the Prosthodontics Department of the NSMU. I was interested in research, and in 2005 I enrolled in postgraduate courses at the NSMU. In 2008, I defended my Russian candidate thesis at Tver State Medical Academy, Tver, Russia, and received the Russian scientific degree of Candidate of Medical Sciences. Although I defended my thesis successfully, I wanted to increase my knowledge of scientific methodology in order to plan and conduct my own study, and analyse its results using international standards. For this reason, in 2010 I enrolled in the Master of Public Health (MPH) programme at the International School of Public Health in Arkhangelsk (ISPHA). This school was established as a result of a cooperation between the NSMU, the University of Tromsø (now UiT The Arctic University of Norway), and several other universities of Norway, Sweden, and Finland. Combining my education at the ISPHA and work as an Associate Professor in the Prosthodontics Department, I defended my MPH thesis in 2012. The knowledge I obtained in epidemiology and biostatistics during my MPH training changed my life. Although I was involved in both clinical dental practice and teaching, I was interested in research and wanted to continue my education in this field. In 2015-2016, I was the recipient of a PhD position at UiT within the joint Arkhangelsk-Tromsø PhD Programme. While in this programme, I decided to focus on oral health in Russian young adults, as they represent an insufficiently studied age group in this regard. I planned the study described in this thesis in collaboration with my PhD supervisors, and I collected data from medical and dental students of the NSMU during the 2015-2016 academic year. I consider this small study a significant point in my education and an important step in my scientific career.

Tromsø, November 2018   Sergei N. Drachev (SND)

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Summary (in English)

Background: Dental caries and periodontal diseases are the most common oral diseases, affecting millions of people worldwide. These diseases are highly preventable; therefore any measures that promote oral health (OH) should be implemented at the community and individual level. Although programmes designed to prevent OH problems often focus on children, young adults aged 18-25 years are also an important target group for such programmes. Indeed, this age range comprises periods of biological, psychological, and social development and is a transition between adolescence and adulthood, when persons take responsibility for their health and may still change their health behaviour. Studying factors which may influence OH is extremely important to develop effective preventive programmes for young adults. In Russia, there is little information on OH and factors associated with OH in young adults. Thus, we conducted a study in a group of young medical and dental undergraduate students in North-West Russia.

Objective: The study aimed to: i) investigate dental caries experience and determinants (socio-demographic factors, socioeconomic factors, and OH behaviour); ii) assess the prevalence of dental anxiety (DA) and to explore the association between DA and socio-demographic factors, socioeconomic factors, OH behaviour, general health, and OH; and iii) investigate how socio-demographic factors, socioeconomic factors, OH behaviour, self-reported OH characteristics, and clinically-assessed OH are related to OH-related quality of life (OHRQoL).

Methods: This cross-sectional study included 474 medical and 333 dental undergraduate students of Russian nationality aged 18-25 years from the Northern State Medical University (NSMU), Arkhangelsk, North-West Russia. Information on socio-demographic factors, socioeconomic factors, OH behaviour, general health, and OH was obtained from a

structured, self-administered questionnaire. Corah's Dental Anxiety Scale (DAS) was applied to measure DA. OHRQoL was measured by the short version of the OH Impact Profile with 14 items. A clinical dental examination was performed to assess dental caries experience, Simplified Oral Hygiene Index, and Gingival Index. Dental caries experience was based on the decayed (D) missing (M) filled (F) teeth (T) index (DMFT index).

Results: The prevalence of dental caries (DMFT >0) was 96.0%, overall mean DMFT index was 7.58 (DT 0.61, MT 0.12, and FT 6.84). Older age, being a female, high subjective socioeconomic status, and skipping tooth-brushing were associated with a higher DMFT index. DMFT index also increased among students who reported regular dental visits, and these students also had lower odds of being in the dental caries-free group. High DA (DAS score ≥13) was found in 13.7% and 2.2% of medical and dental students, respectively. Female sex, lower mother's education, and poor self-assessed OH were associated with DA in medical students. Corresponding factors in dental students were female sex, irregular dental visits, infrequent tooth-brushing, pain in mouth, and number of missing teeth due to dental caries. More than half of the students (53.6%) reported low OHRQoL during the last 12 months. Female sex, rural place of childhood residence, poor self-assessed dental aesthetic, dissatisfaction with mouth and teeth, and a higher DMFT index, were all significantly, independently associated with low OHRQoL.

Conclusions: High prevalence of dental caries and high DMFT index, with a dominance of FT, were found among our Russian medical and dental undergraduate students. The level of DA was higher in medical than in dental students. The study also showed that OH affects students' quality of life. Public health measures should focus on promoting dental literacy, increasing knowledge on the prevention of dental diseases, and motivating good OH habits to improve OH and OHRQoL in young adults in North-West Russia.

Summary (in Russian)

Введение. Кариес и заболевания пародонта являются наиболее распространенными заболеваниями полости рта, которые поражают миллионы людей во всем мире. Эти заболевания легко поддаются профилактике, поэтому профилактические меры по укреплению здоровья полости рта должны осуществляться на общественном и индивидуальном уровнях. Хотя программы по укреплению стоматологического здоровья часто ориентированы на детей, молодые люди в возрасте 18-25 лет также являются важной целевой группой для таких программ. Действительно, этот возраст охватывает периоды биологического, психологического и социального развития личности и представляет собой переходный период между подростковым и взрослым возрастом, когда молодые люди сами становятся ответственными за свое здоровье и могут изменить свое собственное поведение в отношении здоровья. Изучение факторов, которые могут влиять на здоровье полости рта чрезвычайно важно для разработки эффективных профилактических программ для молодых людей. В России представлено мало информации о стоматологическом здоровье молодежи и факторах, связанных с ним. Поэтому мы провели исследование в группе молодых студентов-медиков и студентов-стоматологов, обучающихся в одном из университетов на Северо-Западе России.

Цели исследования. Были сформулированы следующие цели: i) исследовать интенсивность и распространенность кариеса и его детерминанты (социально-демографические, социально-экономические и поведенческие факторы); ii) оценить распространенность стоматологической тревожности и изучить ее взаимосвязь с социально-демографическими и социально-экономическими факторами; поведенческими факторами, имеющими отношение к стоматологическому здоровью; состоянием общего здоровья и стоматологического здоровья; iii) исследовать, каким

образом социально-демографические и социально-экономические факторы; поведение, связанное со стоматологическим здоровьем; а также показатели стоматологического здоровья, оцененные с помощью опросника и клинического стоматологического обследования, взамосвязаны с качеством жизни, имеющим отношение к здоровью полости рта.

Методы. В поперечном исследовании приняли участие 474 студента-медика и 333 студента-стоматолога в возрасте 18-25 лет, русские по национальности, обучающиеся в Северном государственном медицинском университете, город Архангельск, Северо-Запад России. Информация о социально-демографических и социально-экономических факторах; поведенческих факторах, имеющих отношение к стоматологическому здоровью; состоянии общего здоровья и стоматологического здоровья была получена из структурированного опросника, который заполняли участники исследования. Для оценки стоматологической тревожности была применена шкала стоматологической тревожности Corah (1969). Качество жизни, связанное со здоровьем полости рта, было оценено с помощью опросника OHIP-14 (1997). Было проведено клиническое стоматологическое обследование для оценки кариеса зубов, индекса упрощенной гигиены полости рта Green и Vermillion (1964) и десневого индекса Loe и Silness (1963). Кариес оценивался на основании индекса КПУ зубов (К-кариозные, П-пломбированные, У-удаленные зубы).

Результаты. Распространенность кариеса (КПУ >0) была 96.0% со средним показателем КПУ 7.58 (К 0.61, П 6.84, и У 0.12). Старший возраст, женский пол, высокий субъективный социально-экономический статус и пропуск чистки зубов были взаимосвязаны с более высоким показателем КПУ. Индекс КПУ был выше среди тех студентов, кто посещал стоматолога регулярно, при этом шансы иметь

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КПУ=0 у данной группы студентов уменьшались. Высокая стоматологическая тревожность (оценка по шкале Corah ≥13) отмечалась у 13.7% студентов-медиков и 2.2% студентов-стоматологов. Женский пол, более низкое образование матери, плохая самооценка своего стоматологического здоровья были связаны со стоматологической тревожностью студентов-медиков. У студентов-стоматологов соответствующие факторы включали женский пол, нерегулярное посещение стоматолога, нечастую чистку зубов, боль во рту, и количество удаленных вследствие кариеса зубов. Более половины студентов (53.6%) отметили низкое качество жизни, связанное со здоровьем полости рта, за последние 12 месяцев. Женский пол, проживание в детстве в сельской местности, плохая самооценка стоматологической эстетики, неудовлетворенность полостью рта и зубами, а также более высокий индекс КПУ - все эти факторы были статистически значимо и независимо связаны с низким качеством жизни, имеющим отношение к здоровью полости рта.

Выводы. Высокая распространенность и интенсивность кариеса по индексу КПУ с доминированием пломбированных зубов были обнаружены у русских студентов-медиков и студентов-стоматологов. Уровень стоматологической тревожности был выше у студентов-медиков, чем у студентов-стоматологов. Исследование показало, что здоровье полости рта влияет на качество жизни студентов. Чтобы улучшить стоматологическое здоровье и качество жизни, связанное с ним, у молодых людей на Северо-Западе России, меры общественного здравоохранения должны быть направлены на повышение стоматологической грамотности, расширение знаний о профилактике стоматологических заболеваний и мотивацию к поддержанию гигиены полости рта.

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List of abbreviations

CI: confidence interval

DA: dental anxiety

DAS: dental anxiety scale

DMFT index: decayed missing filled teeth index

DT: decayed teeth

FT: filled teeth

GI: Gingival Index

IRR: incidence rate ratio

ISPHA: International School of Public Health in Arkhangelsk

MDAS: modified dental anxiety scale

MPH: Master of Public Health

MCAR: missing completely at random

MT: missing teeth

NSMU: Northern State Medical University

OH: oral health

OHI-S: Simplified Oral Hygiene Index

OHIP-14: Oral Health Impact Profile with 14 items

OHRQoL: oral health-related quality of life

OR: odds ratio

SD: standard deviation

SES: socioeconomic status

SiC index: Significant Caries index

SND: Sergei Nikolaevich Drachev

WHO: World Health Organisation

List of papers

This thesis is based on the following original papers, to which we hereafter refer by their Roman numerals (I-III).

Paper I

Drachev SN, Brenn T, Trovik TA. Dental caries experience and determinants in young adults of the Northern State Medical University, Arkhangelsk, North-West Russia: a cross-sectional study. BMC Oral Health. 2017;17(1):136.[1]

Paper II

Drachev SN, Brenn T, Trovik TA. Prevalence of and factors associated with dental anxiety among medical and dental students of the Northern State Medical University, Arkhangelsk, North-West Russia. Int J Circumpolar Health. 2018;77(1):1454786.[2]

Paper III

Drachev SN, Brenn T, Trovik TA. Oral health-related quality of life in young adults: A survey of Russian undergraduate students. Int J Environ Res Public Health. 2018;15(4):719.[3]

Chapter 1. Introduction

1.1. Global burden of oral conditions

Oral diseases remain a major public health challenge worldwide. In 1990, nearly half of the world population (age-standardised prevalence: 48.4%) suffered disabilities due to oral conditions, such as untreated dental caries, severe periodontitis, and total tooth loss [1]. In 2015, the global age-standardised prevalence of oral conditions remained static (48.0%), but the number of people with oral conditions increased by 40% between 1990 and 2015 due to demographic changes, including population growth and aging [1]. Untreated dental caries in permanent teeth is the most prevalent oral disease, affecting 1.7, 2.4, and 2.5 billion people worldwide in 1990, 2010, and 2015, respectively [1, 2].

There are considerable variations in the prevalence and incidence of untreated dental caries between regions and countries. In 2010, the age-standardised prevalence and incidence of untreated dental caries in permanent teeth in individuals aged 5 years or older varied from 12.2% in Singapore to 68.0% in Lithuania, and from 9945 cases per 100,000 person-years in Nigeria to 76,472 cases per 100,000 person-years in Iceland, respectively [2]. In Russia, the corresponding figures were 42.6% and 35,178 cases per 100,000 person-years [2]. Dental caries is a chronic disease that can cause considerable economic and quality of life burdens [3]. Globally, the total cost of dental diseases was estimated at $544.41 billion in 2015 [4]. Nonetheless, if dental caries is left untreated, it may cause severe dental pain and tooth loss [5], leading to functional, social, and psychological problems. Nevertheless, dental caries is a highly preventable disease [3] that has essential implications for oral health (OH) policy, which should focus on the prevention of oral diseases.

1.2. Young adulthood as an important age group in which to study oral health

A systematic review published in 2015 showed that the burden of untreated dental caries is shifting from children to adults, with peaks in prevalence at ages 6, 25, and 70 years [2]. Researchers hypothesise that the peak prevalence at age 25 years may be explained by insufficient OH promotion activities in young adults [2]. Indeed, according to the World Health Organisation (WHO), children aged 6, 12, and 15 years are key groups that need to be monitored for dental caries and periodontal disease. Nevertheless, promoting OH in schoolchildren may not have lasting effects into adulthood, and cannot guarantee lifetime low levels of oral disease. Between the ages of 18-25 years, young adults go through periods of biological, psychological, and social development and transition from adolescence to adulthood, when they take responsibility for their health and may still change their own health behaviour [6]. Therefore, studying the socio-behavioural factors which may influence OH is extremely important to develop effective preventive programmes for young adults.

1.2.1. Dental health in young adult populations: epidemiological findings

The DMFT index reflects the sum of decayed (D), missing (M), and filled (F) teeth (T) and is one of the most commonly used tools to assess dental health and quantify dental caries experience [7]. Epidemiological studies on dental health in young adults have been conducted in many countries (Table 1) and showed a wide variation in DMFT index and prevalence of dental caries (DMFT index >0): from 1.4 [8] to 7.6 [9] and from 59.0% [8] to 93.9% [9], respectively. Within the structure of DMFT index, DT constituted from 21.4% [8] to 44.5% [10]; MT from 0.4% [11] to 12.3% [12]; and FT from 47.4% [12] to 78.6% [8].

Previously reported risk factors associated with dental health in young adults include socioeconomic factors (income, education, occupation) [10, 12-17], socio-demographic factors (age, sex, place of residence) [10, 16-19], OH behaviour and attitudes [8, 11, 14, 15, 18, 20], and exposure to fluoridated drinking water [10, 13, 16].

Table 1. Overview of dental studies in young adults

Country, year, [reference]	Participants, age, sample size	Prevalence of dental caries (DMFT index >0)	Mean DMFT index	Structure of DMFT index	Main findings
				Results	
Hungary, 2001, [9]	Adolescents, 18 years, n=710	93.9%	7.64	no data	High prevalence of dental caries, high DMFT index, and poor periodontal status.
Australia, 2003, [13]	Army recruits, 17-35 years, n=499	84.8% in overall sample; 81.0% in age group of 17-20 years	17-20 years – 3.59; 21-25 years – 4.63	17-20 years: DT 1.43 (39.8%) MT 0.07 (1.9%) FT 2.09 (58.2%) 21-25 years: DT 1.69 (36.5%) MT 0.21 (4.5%) FT 2.72 (58.7%)	Dental caries experience was lower in persons from the highest socioeconomic group. Subjects with lifetime exposure to fluoridated water had a lower DMFT index.
Israel, 2004, [11]	Army recruits, 18-19 years, n=123	87.0%	6.77	DT 2.68 (39.6%) MT 0.03 (0.4%) FT 4.05 (59.8%)	Participants with low levels of dental caries had more positive OH attitudes and behaviour.
Brazil, 2005, [12]	Male conscripts, 18 years, n=473	88.6%	5.7	DT 2.3 (40.4%) MT 0.7 (12.3%) FT 2.7 (47.4%)	Lower socioeconomic indicators were associated with high dental caries status. Mother's education could be a good predictor for dental caries.
Australia, 2005, [10]	Army recruits, 17-51 years, n=973	67.2% in age group of 17-20 years; 73.5%	17-20 years – 2.43; 21-25 years – 3.44	17-20 years: DT 0.95 (39.1%) MT 0.03 (1.2%) FT 1.45 (59.7%) 21-25 years: DT 1.53 (44.5%) MT 0.07 (2.0%)	A decline in the prevalence of dental caries and dental caries experience was observed between 1996 and 2002-2003. Age, level of education, and lifetime exposure to fluoridated drinking water had a significant effect on dental caries experience.

	in age group of 21-25 years			FT 1.84 (53.5%)	
Australia, 2008, [14]	Young adults, 20-25 years, n=644	79.4%	3.68	data presented for DMFS index: DS 0.92 MS 1.03 FS 4.10	Socioeconomic factors, patterns of dental visits, and health behaviours were risk indicators for dental caries.
Turkey, 2008, [19]	Patients attending a dental school, 18-25 years, n=416	no data	5.7 in females, 5.8 in males	no data	Plaque accumulation, age, and sex were the significant variables related to DMFT index.
Mexico, 2009, [21]	Adolescents and young adults, 16-25 years, n=1027	74.4%	4.04	DT 1.01 (25.0%) MT 0.46 (11.4%) FT 2.57 (63.6%)	High prevalence of dental caries and dental caries experience were found. Restorative experience was high compared to other studies conducted in Latin America.
Australia, 2010, [15]	Follow-up of a cohort, 17-34 years, n=925	68.2% in age group of 17-25 years	no data	no data	Dental caries and dental treatment experience were associated with dental visits and socioeconomic factors.
Finland, 2013, [16]	Male conscripts, 19-21 years, n=13,564	78.7%	4.11	DT 1.4 (34.1%) MT no data FT no data	There were regional/geographical differences in the prevalence of dental caries. Dental caries protective factors were Swedish as the main language (indicating higher SES), high fluoride content in water, and living in urban areas (indicating higher educational status). There was no association between dentist density and the prevalence of dental caries.

Japan, 2013, [6]	University students, 18-19 years, n=2087	no data	2.1 in males, 2.6 in females	no data	Self-rated OH was influenced by subjective symptoms of temporomandibular disorders and stomatitis, OH behaviour, DMFT index, and malocclusion.
China, 2013, [8]	Hong Kong young adults, 18 years, n=324	59%	1.4	DT 0.3 (21.4%) MT <0.1 (<7.1%) FT 1.1 (78.6%)	A higher DMFT index was associated with utilisation of dental services during past 3 years. Tooth-brushing frequency and OH knowledge were associated with the number of sextants with healthy gums.
Lithuania, 2016, [17]	Adolescents attending school, 18 years, n=1063	78.3%	2.93	DT 0.79 (27.0%) MT 0.15 (5.1%) FT 1.99 (67.9%)	There were differences in dental caries experience between urban and rural areas and between counties, which could be explained by the socioeconomic differences in the country.

Abbreviations: DMFT index, decayed missing filled teeth index; DT, decayed teeth; MT, missing teeth; FT, filled teeth; DMFS index, decayed missing filled surface index; DS, decayed surface; MS, missing surface; FS, filled surface; SES, socioeconomic status.

1.2.2. Dental health in Russian young populations

In 2001, an epidemiological survey from the Arkhangelsk Region of North-West Russia investigated the dental health of 447 conscripts aged 18-19 years and reported a prevalence of dental caries of 94.3% and a mean DMFT index of 5.9 [22]. In the structure of DMFT index, DT, MT, and FT accounted for 45.8%, 8.5%, and 45.8%, respectively. The authors also reported low fluoride, calcium, and magnesium content in the drinking water of most areas of the Arkhangelsk Region. In 2009, a study of 432 students aged 16-25 years was conducted in Moscow [23], which reported a prevalence of dental caries of 97.1% and 99.3% in age groups 16-20 years and 21-25 years, respectively. The overall mean DMFT index was 10.4 (DT 5.7, MT 0.8, FT 3.9), with DT accounting for 54.8% of dental caries experience. A high DMFT index (8.9) was also found in Russian young adults aged 24 years who attended dental treatment at a dental school and a private clinic in Moscow [24].

Thus, epidemiological studies conducted in Russian young adults have shown a high prevalence of dental caries and high DMFT index with high need for dental treatment. These studies presented dental status in a descriptive manner, and despite the poor dental health observed, no determinants were studied. Nevertheless, the high number of teeth with untreated dental caries may reflect a low availability of dental treatment or an unwillingness of the part of Russian young people to seek dental care, for instance, due to dental anxiety (DA).

1.3. Dental anxiety and dental health

DA remains an important problem in clinical dentistry, despite increased awareness among dentists and patients of preventive approaches to oral diseases, and innovations in dental equipment and pain reduction [25]. In studies, DA, which is frequently used interchangeably with the term "dental fear", is described as "strong negative feelings associated with dental treatment" [25, 26]. Several psychometric tests have been developed

to differentiate people with and without DA. Along with single-item questions, Corah's Dental Anxiety Scale (DAS) [27], the Modified Dental Anxiety Scale (MDAS) [28], and Kleinknecht's Dental Fear Survey [29] are the most commonly used tools in epidemiological studies to measure DA in adults [30, 31], although none of the existing instruments are regarded as a gold standard [30]. The prevalence of high DA varies from 2% to 30% worldwide, depending on the study population and the methods applied to measure DA [25, 32]. There is strong evidence that DA is associated with frequency of dental visits: it has been reported that individuals with higher DA tend to visit the dentist irregularly [33-36], which in turn may lead to a deterioration in OH. Studies have demonstrated that DA is associated with poor self-reported and clinically-assigned OH [33, 34, 37-40], more DT and MT [36, 38], fewer FT [36, 41], and worse periodontal health [40, 42]. Moreover, according to the model of the vicious cycle of dental fear, "people with high dental fear are more likely to delay treatment, leading to more extensive dental problems and symptomatic visiting patterns which feed back into the maintenance or exacerbation of existing dental fear" [34]. DA has been found to be related to psychological health [43, 44], personality traits [45], and general health [32]. Previous studies have also shown that the level of DA depends on socio-demographic and socioeconomic factors. A higher level of DA has been reported among females than males [35, 46-48], among rural than urban populations [41, 49], and among persons with lower education [32, 41].

1.3.1. Dental anxiety and associated factors in young adults

Several reports showed that younger individuals are more likely to experience DA than middle-aged and elderly adults [36, 41]. Moreover, another study demonstrated an increase in DA over an 8-year study period among participants aged 18-26 years [50]. Many studies have focused on DA in young university students [51-62]. Lower DA has been found in

dental than in non-dental students [51-53], and further reductions were shown among dental students during their dental training [53, 54]. Reported predictors for DA have included self-perceived need for dental treatment, tobacco use, abnormal attitudes toward food, insufficient oral hygiene, less frequent dental visits, and the anticipation of pain [55, 60, 61]. No relationships between DA and clinically-assigned OH have been studied in young university students, but studies on other factors showed that female students had a higher DA than male students [52, 55-58], whereas other studies found no sex differences [51, 59, 60].

1.3.2. Dental anxiety in Russian young adults

We found only one study on DA, which was conducted in St. Petersburg in 1992, more than 25 years ago [63]. The study included 288 urban schoolchildren aged 13-18 years and yielded a 12.6% prevalence of high DA. Sex, treatment and toothache experience, dental fear in the family, and fear at first dental visit were associated with high DA. At present, there is no information available on the prevalence of DA and associated factors in Russian young adults aged 18-25 years.

1.4. Oral health and quality of life

In addition to objective methods of OH evaluation performed by dental professionals, patient perception of OH is also important in the assessment of treatment needs and clinical outcome [64, 65]. The concept of OH-related quality of life (OHRQoL) uses patient-centred outcome measures to identify the impact of OH on aspects of everyday life in terms of a person's functional, social, and psychological well-being [66]. Over the past decades, a set of psychometric instruments has been developed to assess OHRQoL. The OH Impact Profile is widely used to measure OHRQoL in adults and dentate elderly

people [65]. The short version of the OH Impact Profile includes 14 items (OHIP-14), which represent the negative consequences that oral diseases have on OHRQoL [67].

1.4.1. Oral health-related quality of life in young adults

Studies have shown that young and middle-aged adults report worse OH than older adults, despite the fact that oral problems tend to increase with age [68-70]. The factors that affect self-reported OH are not well understood, but it has been suggested that oral diseases have a deleterious effect on subjective OH, and that this effect is likely higher at younger ages [70]. Moreover, the attitude toward OH acquired in young life manifests as life goes on and may affect OHRQoL. Previously reported factors associated with OHRQoL in young adult populations, including young university students, are negative life events [71], education [72, 73], self-rated OH [72, 74], and subjective symptoms of temporomandibular disorders and oral pain [74]. The influence of clinical factors (dental caries, MT, and periodontal status) on OHRQoL is inconsistent, with some studies showing no relationship [75, 76] and others showing that poor clinically-assessed OH is associated with worse OHRQoL [72, 74, 77]. It was also found that malocclusion has a negative impact on OHRQoL in young adults [73, 77]. Almost all aforementioned studies used OHIP-14 to measure OHRQoL in young adult populations. Few studies on OHRQoL targeted dental students [78-80]. Self-reported OH problems and aspects related to previous dental experience were found to have a greater impact on OHRQoL [78, 79], although no clinical factors were studied.

1.4.2. Oral health-related quality of life in Russian young adults

To our knowledge, there has been little research on OHRQoL in Russian adults. We found only two studies that assessed OHRQoL in middle-aged Russians with periodontal diseases [81, 82]. One study validated the Russian version of the OHIP-14, and the researchers

reported good face and content validity of the OHIP-14 items [81]. Another study assessed the effectiveness of periodontal treatment on OHRQoL in patients with various forms of periodontitis [82]. No epidemiological studies assessing OHRQoL in Russian young adults were performed.

1.5. Medical and dental students as specific groups in which to study oral health

Medical and dental students are expected to have specific knowledge about disease prevention and hygiene, and therefore are expected to show better health behaviour, including OH behaviour, compared to their counterparts in the general population. In addition, students from medical and dental faculties may have high socioeconomic status (SES), which in turn may lead to better OH [18]. Nevertheless, the results of studies are mixed. For instance, studies have shown that the proportions of non-smokers among German physicians and medical students [83] and Polish dental students [84] are higher than among the respective general populations. On the other hand, a high prevalence of smoking was observed among medical students in India [85] and among male medical and dental students in Nepal [86]. Moreover, medical students in Saudi Arabia [87] and Italy [88] demonstrated a low knowledge of the health risks associated with tobacco use. A Russian study published in 2016 also found a high prevalence of tobacco smoking in both medical doctors (68.4% of males and 25.3% of females) and medical students (52.4% of males and 34.1% of females) [89]. Dental studies found more positive OH behaviour in dental students than in civil engineering students in Columbia [90] and technology students in Lithuania [91]. Nevertheless, an Indian study revealed that only 54.6% and 38.5% of the included dental and medical students, respectively, brushed their teeth twice a day, and more than 80% of the study participants had never used dental floss [20]. Moreover, Yemeni medical and dental students attending a private university (which may reflect a

higher SES) had poorer attitudes and OH behaviour compared to their peers from a public university [92]. Studies have also shown that dental students have more positive OH behaviour than their medical counterparts [20, 93], and further improvement was found among dental students during their dental training [91, 94]. A longitudinal Spanish study revealed that dental students receive more dental treatment than medical students [93]. Nonetheless, the medical students had a lower DMFT index than the dental students both at the start (3.4 vs. 5.0) and at the end (4.3 vs. 5.9) of the study. In contrast, an Indian study found a mean DMFT index of 1.2 in dental students vs. 2.0 in medical students [20]. In 2008-2009, Halboub et al. examined a sample of students from the faculties of medicine, dentistry, and literature at Sana'a University, Yemen, and found no statistically significant differences in overall DMFT index between the faculties (3.9, 4.3, and 4.2, respectively) [18]. There is also strong evidence that the level of self-reported OH behaviour in dental students varies by country [95-97]. One may speculate that underlying cultural and socioeconomic factors and differences in educational systems across countries may play important roles in health behaviour, including OH behaviour, among medical and dental students, which in turn may be reflected in OH.

In Russia, we found one study performed in 1987 that examined the dental health of medical students [98]. The authors observed a high prevalence of dental caries (98.5%) and a mean DMFT index of 9.3, reflecting poor OH. In the structure of DMFT index, DT, MT, and FT accounted for 28.5%, 10.8%, and 60.7%, respectively. Only 38.2% of the study participants had good oral hygiene. The researchers reported that the most important risk factors of dental caries are hereditary predisposition and oral hygiene, although no risk estimates were presented.

1.6. Conceptual framework of the thesis

Figure 1 shows the conceptual framework of the thesis. The study focuses on the three main outcomes: clinically-assessed OH, DA, and OHRQoL. Taking into consideration the model of the vicious cycle of dental fear, DA and OH are supposed to be related to each other. Whereas self-reported OH characteristics are associated with OHRQoL, the influence of clinically-assessed OH on OHRQoL is inconsistent. In addition, four groups of factors (socio-demographic factors, socioeconomic factors, OH behaviour, and self-reported general characteristics) may be associated with the studied outcomes. These associations have been investigated in many international studies, but no information has been presented in Russian young adults, including Russian medical and dental students.
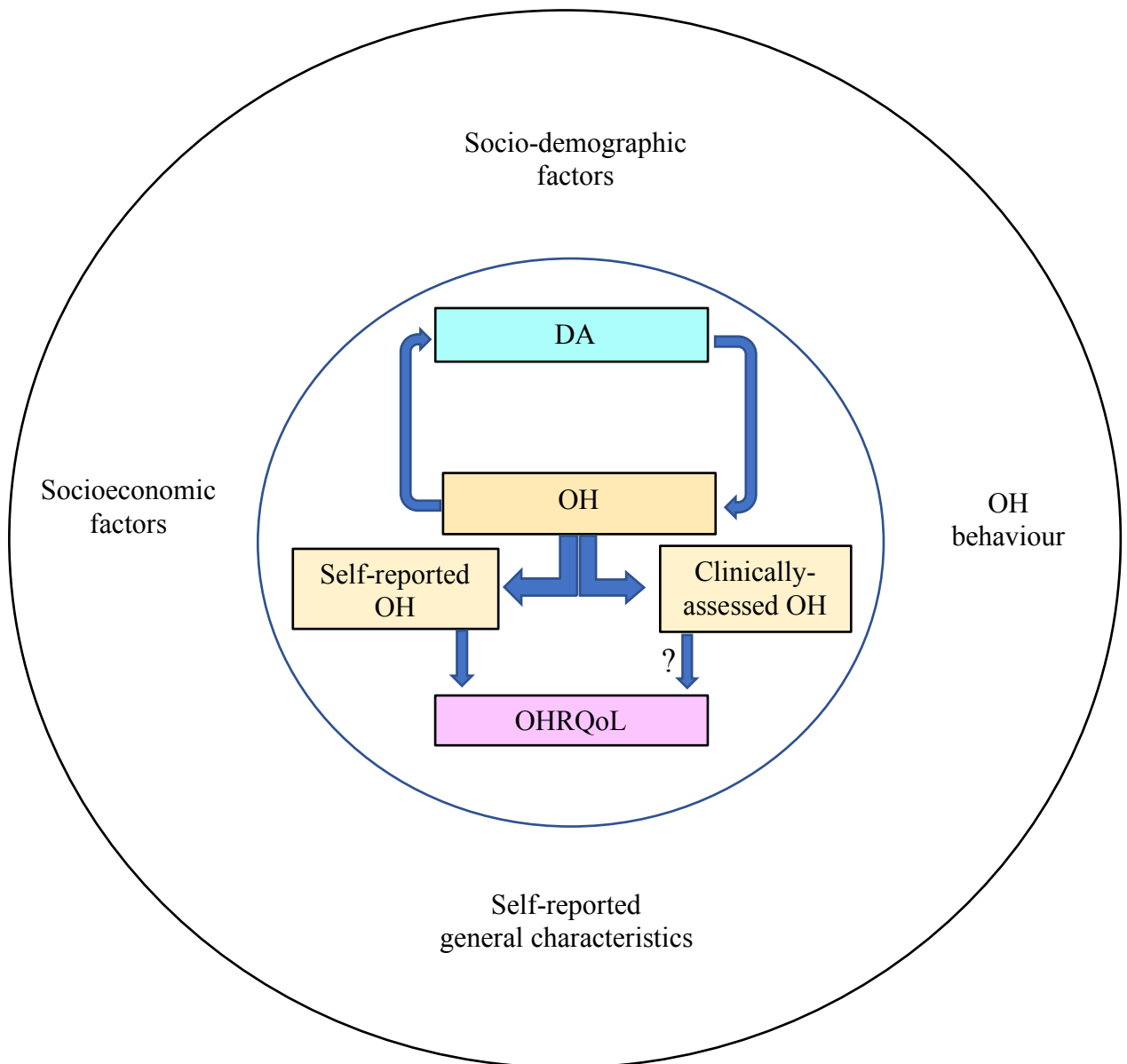
Figure 1. Conceptual framework of the thesis

Abbreviations: DA, dental anxiety; OH, oral health; OHRQoL, oral health-related quality

of life.

1.7 Research questions

The following research questions were formulated:

1. How are socio-demographic factors, socioeconomic factors, and OH behaviour related to dental caries experience in Russian medical and dental undergraduate students aged 18-25 years?

2. How do Russian medical undergraduate students differ from Russian dental undergraduate students in terms of DA?

3. What factors impact DA in Russian medical and dental undergraduate students?

4. How does OH affect OHRQoL in Russian medical and dental undergraduate students?

5. What factors impact OHRQoL in Russian medical and dental undergraduate students?

Chapter 2. Aims of the thesis

The overall aim of this thesis was to study OH and its associated factors in medical and dental undergraduate students aged 18-25 years attending the NSMU in Arkhangelsk, North-West Russia. The following specific objectives were formulated in relation to this study group:

- To investigate dental caries experience and determinants (socio-demographic factors, socioeconomic factors, and OH behaviour).

- To assess the prevalence of DA in medical and dental students and to explore the association between DA and socio-demographic factors, socioeconomic factors, OH behaviour, general health, and OH.

- To assess OHRQoL and to investigate how socio-demographic factors, socioeconomic factors, OH behaviour, self-reported OH characteristics, and clinically-assessed OH are related to OHRQoL.

Figure 2 reflects the structure of Papers I-III, on which the current thesis is based.

1. Socio-demographic and socioeconomic factors 2. OH behaviour 3. Self-reported general characteristics 4. Self-reported OH characteristics	— Paper II →	DA

Paper II

1. Socio-demographic and socioeconomic factors 2. OH behaviour	— Paper I →	Clinically-assessed OH

Paper III

1. Socio-demographic and socioeconomic factors 2. OH behaviour 3. Self-reported OH characteristics	— Paper III →	OHRQoL

Figure 2. Structure of Papers I-III

Abbreviations: OH, oral health; DA, dental anxiety; OHRQoL, oral health-related quality of life.

Chapter 3. Materials and methods

3.1 Study setting and population

This cross-sectional study was conducted at the NSMU, Arkhangelsk, North-West Russia, during the 2015-2016 academic year. NSMU students are mainly from the European North-West of Russia, which includes the regions of Arkhangelsk, Vologda, Murmansk, the Komi Republic, the Republic of Karelia, and the Nenets Autonomous Okrug (Fig. 3). Altogether, these regions cover an area of approximately 1.5 million km^2 and have a population of 4.6 million (78.9% urban in 2016) [99].

Figure 3. Map of North-West Russia

From https://wikitravel.org/upload/shared//6/68/Northwestern_Russia_regions2.png.

We invited full-time undergraduate students from two faculties: 1) medical (n=1482), which included students from the departments of general medicine (n=981) and paediatric medicine (n=501); and 2) dental (n=524). Combined, these faculties make up approximately 51.4% of the total number of students at the NSMU. For convenience,

students from other non-medical faculties and smaller medical faculties and departments (medical biochemistry, medical prophylaxis, pharmacy) were not considered. Students from the international faculty of general practitioners were also not invited, as we focused on students of Russian nationality only (Fig. 4).
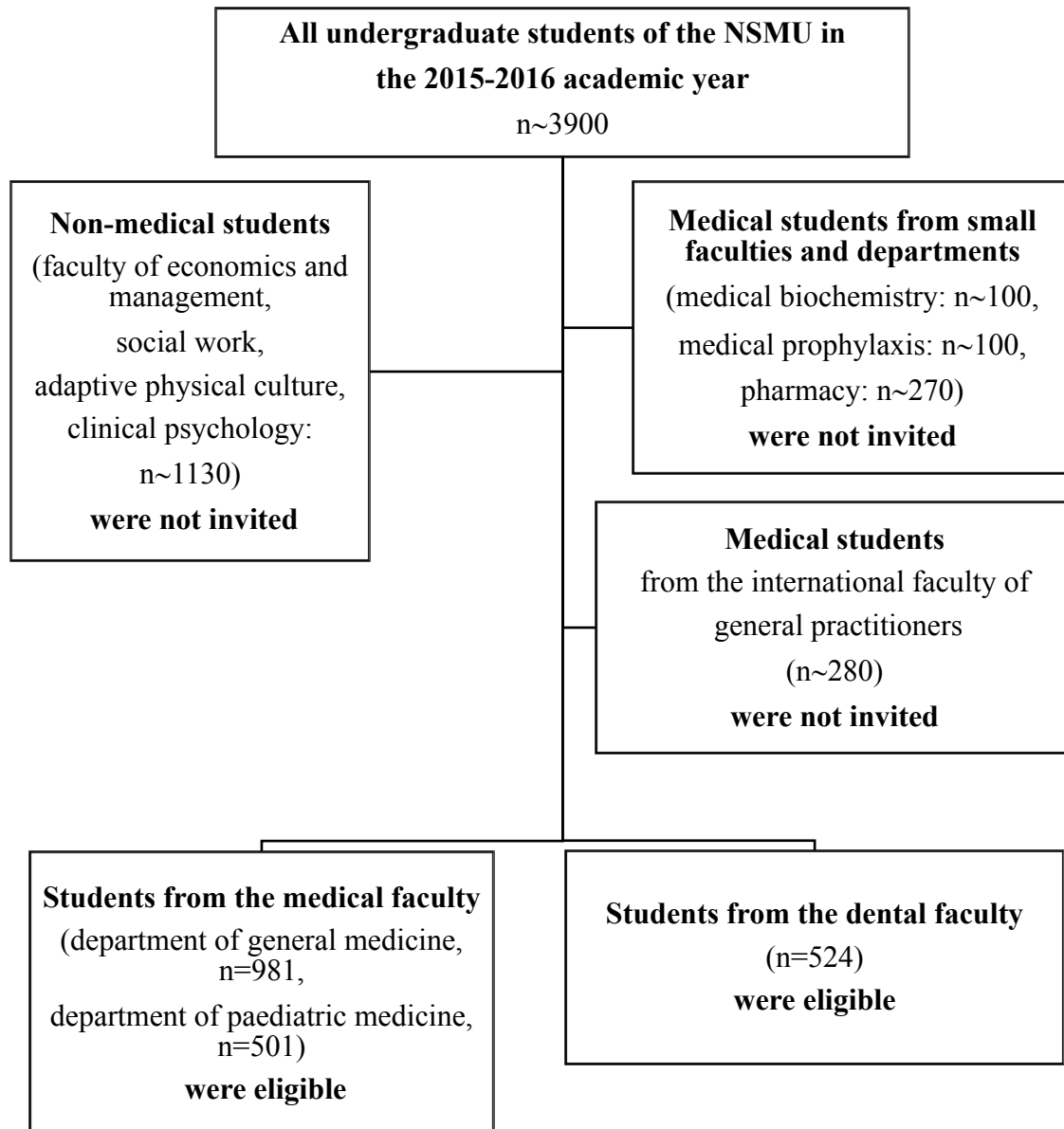
Figure 4. Flow chart of the NSMU students eligible for the study

Abbreviations: NSMU, Northern State Medical University.

3.2 Sampling

The study included two stages. In Stage 1, which was conducted in November-December 2015, all students from the medical and dental faculties and each year of education were

informed verbally and in an invitation letter (Appendix A) about the study and invited to participate at the end of a randomly-selected, scheduled classroom lecture. Before coming to the lecture, the researcher (SND) received permission in advance from both the university administration and each lecturer. According to the rules and regulations of the NSMU, attending lectures is a mandatory part of education. It is permissible to skip a lecture due to illness or another serious reason. Altogether, 1579 students attended the recruitment lectures. The overall attendance rate of the lectures was 78.7% and varied from 55.1% (6th-year medical students from the department of general medicine) to 100% (4th-year medical students from the department of general medicine). No attempt was undertaken to follow up with students who did not attend the lecture. Of the invited students, 1385 agreed to participate (overall response rate 87.7%). The response rates were similar across the faculties and years of education (>83.3%), except for 4th-year medical students from the department of general medicine (57.8%). During the last 15 minutes of the lecture, students signed an informed consent form (Appendix A) and completed a structured, self-administered, anonymous questionnaire in Russian. All students participating in Stage 1 gave their mobile phone number so they could be contacted for Stage 2.

Stage 2 was performed in February-May 2016 and included completion of a second, structured, self-administered, anonymous questionnaire and a clinical dental examination. In order to get comparable groups of medical and dental students, and taking into account an outcome prevalence of 0.50, a confidence interval (CI) of 95%, and an error margin of 5%, the necessary sample size was calculated as ~380 students in each group. Assuming that medical students may not be as supportive of the OH study as dental students, and allowing for refusals, no-shows, and exclusions, we invited 420 dental students and 823 medical students to attend Stage 2. For medical students, a stratified, random, proportionate sample was selected, taking into consideration the distribution of medical

students across the departments (general medicine and paediatric medicine) and years of education. Altogether, 62 students refused to participate in Stage 2, 135 students did not answer their phone at two separate calls on two separate days, and 145 students did not attend Stage 2. We also excluded 94 students who were outside the target age (18-25 years), were not of Russian nationality, had fixed orthodontic bands, or were pregnant. The Stage 2 response rate was 57.6% and 79.3% in medical and dental students, respectively, and varied across years of education (41.5-69.1% and 70.3-85.4%, respectively). A total of 807 students (overall response rate of 64.9%) participated in Stage 2. Details regarding the lecture attendance and response rates for Stage 1 and Stage 2 in medical and dental students of different years of education are presented in Table 2. The students with no missing data in questionnaires were included in statistical analyses: n=751 in Paper I; n=707 in Paper II; n=666 in Paper III (Fig. 5).

To increase the response rate, a drawing was created to give modest financial motivation to participate. At the end of the data collection period, students who agreed to participate, filled in the Stage 1 questionnaire, and gave their phone number, were entered into a drawing to win 2500 Norwegian kroner. Another drawing for the same amount was done among students who participated in Stage 2. For the drawing, identification numbers and the software «Research Randomizer», which is available online, were used.

Table 2. Lecture attendance and response rates for Stage 1 and Stage 2

Faculty/ department	Year of education (total number of students)	Lecture attendance n (%) *	Response rate for Stage 1 (%) **	Response rate for Stage 2 (%) ***
Medical/ general medicine	1st (n=213)	182 (85.4)	85.7	41.5
	2nd (n=181)	122 (67.4)	93.4	62.5
	3rd (n=150)	138 (92.0)	83.3	63.1
	4th (n=180)	180 (100.0)	57.8	60.6
	5th (n=121)	78 (64.5)	89.7	59.7
	6th (n=136)	75 (55.1)	86.7	64.1
	All (n=981)	**775 (79.0)**	**80.5**	**57.1**
Medical/ paediatric medicine	1st (n=116)	98 (84.5)	94.9	52.2
	2nd (n=104)	74 (71.2)	90.5	69.1
	3rd (n=91)	61 (67.0)	90.2	58.0
	4th (n=83)	50 (60.2)	86.0	55.8
	5th (n=45)	37 (82.2)	100.0	68.0
	6th (n=62)	47 (75.8)	97.9	52.6
	All (n=501)	**367 (73.3)**	**92.9**	**58.6**
Dental	1st (n=127)	98 (77.2)	84.7	78.3
	2nd (n=109)	105 (96.3)	99.0	83.7
	3rd (n=115)	89 (77.4)	100.0	85.4
	4th (n=92)	81 (88.0)	98.8	75.0
	5th (n=81)	64 (79.0)	100.0	70.3
	All (n=524)	**437 (83.4)**	**96.1**	**79.3**
	Total (n=2006)	**1579 (78.7)**	**87.7**	**64.9**

$$* \text{ Lecture attendance} = \frac{\text{number of the students who attended the recruiting lecture}}{\text{total number of the students}}.$$

$$** \text{ Response rate for Stage 1} = \frac{\text{number of the students who participated in Stage 1}}{\text{number of the students who attended the recruiting lecture}}.$$

$$*** \text{ Response rate for Stage 2} = \frac{\text{number of the students who participated in Stage 2}}{\text{number of the students who were invited to Stage 2}}.$$

	Study participants	

	Medical students n=1482	Dental students n=524

Absent at the recruitment lecture	n=340	n=87
Invited to Stage 1	n=1142	n=437
Refused to participate	n=177	n=17
Participated in Stage 1	n=965	n=420
Excluded due to sample size calculation	n=142	n=0
Invited to Stage 2	n=823	n=420
Answered by phone, refused to participate	n=57	n=5
Did not answer by phone	n=128	n=7
Answered, no show	n=125	n=20
Excluded from the study due to age, nationality, orthodontics, pregnancy	n=39	n=55
Excluded from analysis due to missing data	n=32 in Paper I n=52 in Paper II n=83 in Paper III	n=24 in Paper I n=48 in Paper II n=58 in Paper III
Included in the statistical analysis	n=442 in Paper I n=422 in Paper II n=391 in Paper III	n=309 in Paper I n=285 in Paper II n=275 in Paper III

Figure 5. Flow chart of the study sample

3.3 Data collection

3.3.1 Questionnaires

We developed two questionnaires, one for Stage 1 and one for Stage 2, within the project "Oral health and occupational stress in undergraduate students". The full versions of these questionnaires are presented in Appendix B and Appendix C. For Papers I-III and for the thesis, we did not use information on occupational stress in medical and dental students, but focused on OH, DA, OHRQoL, and selected factors, in accordance with our aims.

The Stage 1 questionnaire gathered information on socio-demographic factors, socioeconomic factors, OH behaviour, and self-reported OH characteristics. Age group (18-20, 21-25 years), sex, faculty (medical, dental), place of childhood residence (urban, rural), location of finishing school (Arkhangelsk City, Arkhangelsk Region, other regions), and type of accommodation (hostel, flat/house) were considered as socio-demographic variables. The questionnaire also asked the students to report whether they were eligible for free education (yes, no), which is generally representative of students with higher grades on their entrance exams, and this was used as a socioeconomic variable. A university applicant who does not qualify for free education at the NSMU can still study there, but they must pay annual tuition, usually covered by their parents.

Questions on OH behaviour included frequency of tooth-brushing (infrequent, i.e., never/less than once a week/once every few days/once a day; or frequent, i.e., twice a day/more than twice a day), and skipping tooth-brushing (no, i.e., never or almost never; and yes, i.e., sometimes during a week/every day or almost every day). The students were also asked to report how often they visit a dentist. Responses were given on a 4-point scale: (1) regularly, at least once every 6 months, (2) regularly, at least once a year, (3) occasionally, and (4) no visits in the last 3 years. For analysis, the variable "regularity of dental visits" was categorised as regular (1, 2) and irregular (3, 4). The variable

"toothpaste" was dichotomised into two categories: with fluoride and without fluoride/difficult to answer.

Self-assessed OH, self-assessed dental aesthetic, experienced pain in mouth, experienced gum bleeding during tooth-brushing, and satisfaction with mouth and teeth were considered as self-reported OH characteristics. Self-assessed OH and self-assessed dental aesthetic were categorised as "good" (excellent, very good, or good) and "poor" (fair or poor). The variables "experienced pain in mouth" and "experienced gum bleeding during tooth-brushing" were split into "no" when students responded never or rarely, and "yes" when students responded sometimes, often, or always. Satisfaction with mouth and teeth was assessed by one item with the response options "yes", "no", and "difficult to answer".

The Stage 2 questionnaire collected additional information on socioeconomic variables, as well as self-reported general health characteristics, DA, and OHRQoL. Mother's education was categorised as lower than university (high school: 9-11 years of school; specialised secondary: professional medical or pedagogical college, technicum), and university. Subjective SES was assessed using the MacArthur Scale [100], in which students were asked to report the ranking of their family in Russian society on a ladder with 10 rungs in accordance with socioeconomic indicators (education, income, occupation): 10 was 'best off' and 1 was 'worst off'. Given the skewed distribution of SES and using the median SES (6.0) as the cut-off, this variable was split into "low SES" (1-5) and "high SES" (6-10). Self-reported general health characteristics included three global questions: "Overall, how would you rate your general health/your psychological health/your ability to cope with different aspects of life?" Responses were given on a 5-point scale: (1) excellent, (2) very good, (3) good, (4) fair, and (5) poor. For analysis, each variable was categorised as "good" (1-3) and "poor" (4, 5).

The questions on regularity of dental visits, self-reported general health, self-reported OH characteristics, and mother's education included the additional response option "difficult to answer". When that response was chosen, the data were considered missing, and the students were excluded from the analysis (except for the variable "satisfaction with mouth and teeth").

To assess DA, the four-item Corah's DAS was applied [27]. Students answered each item on a 5-level scale, and the total DAS score was calculated as the sum of the four items (range: 4-20). A DAS score of 13 or more was considered a high DA [101]. OHRQoL was measured by the OHIP-14 [67]. Students rated the frequency with which they experienced negative impacts on their OHRQoL in the last 12 months using a 5-point Likert scale (0) never, (1) hardly ever, (2) occasionally, (3) fairly often, and (4) very often. In addition, each item had the response option "I do not know". If that response was chosen for at least one item, the data were considered missing in the further analysis. The severity of impact on OHRQoL was determined by computing the sum of all items in the OHIP-14, with a maximum possible score of 56 points. A higher score indicated a lower OHRQoL. The prevalence of low OHRQoL was defined as the proportion of students who responded "occasionally", "fairly often", or "very often" for at least one item on the OHIP-14, as was previously applied in other studies among young populations [71, 76, 78].

The questionnaires were developed in English and translated/back-translated to Russian/English by two independent bilingual persons. The conceptual and functional equivalence of the translated questionnaires was verified by colleagues at the NSMU. The final versions were discussed and judged to concur with the original. Before the study began, the questionnaires were pilot-tested on 12 students aged 18-25 years who did not participate in the study, after which only minor changes were required. The Russian version of the OHIP-14 was previously published [81], and the same items were used in the present study without modifications.

3.3.2 Clinical dental examination

A non-invasive clinical dental examination, performed in accordance with WHO recommendations [7], was done at the Dental Clinic of the NSMU. Students were examined in a dental chair under a professional light, using a dental plain mirror and a dental probe without radiographs. One researcher (SND) executed all clinical examinations, and an assistant filled in the details on the clinical sheet (Appendix D). All permanent teeth, excluding third molars, were taken into consideration during the clinical examination. Before the study start, the researcher was carefully calibrated on examination technics and diagnostic thresholds at the Dental Clinic of UiT The Arctic University of Norway in Tromsø. In June 2016, 54 of the examined students were selected randomly for clinical re-examination. The time interval between these two examinations ranged from 1 to 77 days.

Dental caries experience was measured by the DMFT index, and only permanent teeth were considered for its calculation. In accordance with WHO recommendations, a tooth was recorded as DT when:

- a lesion of the tooth's surface had an unmistakable cavity, undermined enamel, or a detectably softened floor or wall;
- a tooth had a temporary filling;
- a tooth had one or more permanent restorations and one or more areas that were decayed;
- a tooth was sealed but also decayed.

Whenever there was doubt, DT was not recorded as present. A tooth was considered filled when one or more permanent restorations were present and there were no carious lesions. Teeth extracted due to dental caries were coded as MT.

The Significant Caries (SiC) index was computed as the mean DMFT index in the tertile of participants with the highest DMFT index [102]. The Simplified Oral Hygiene

Index (OHI-S) proposed by Green and Vermillion (1964) was used to assess oral hygiene [103]. The six preselected surfaces of the index teeth (four posterior and two anterior teeth) were examined for debris and calculus detection. The following scores were used for classifying debris:

0 – no debris or stain present;

1 – soft debris covering not more than one-third of the tooth surface, or presence of
    extrinsic stains without other debris regardless of surface area covered;

2 – soft debris covering more than one-third, but not more than two-thirds, of the exposed
    tooth surface;

3 – soft debris covering more than two-thirds of the exposed tooth surface.

    The scores for classifying calculus were:

0 – no calculus present;

1 – supragingival calculus covering not more than one-third of the exposed tooth surface;

2 – supragingival calculus covering more than one-third, but not more than two-thirds, of the exposed tooth surface or presence of individual flecks of subgingival calculus around the cervical portion of the tooth or both;

3 – supragingival calculus covering more than two-thirds of the exposed tooth surface or a continuous heavy band of subgingival calculus around the cervical portion of the tooth or both.

The total score of the OHI-S was calculated as the sum of the average debris and calculus scores.

    For the assessment of qualitative changes in the gingival soft tissue, we employed the Gingival Index (GI) of Loe and Silness [104]. Six index teeth (44/32/36/24/12/16) and four areas for each tooth (mesial, distal, buccal, and lingual) were examined applying the following scores:

0 – normal gingiva;

1 – mild inflammation – slight change in colour and slight oedema, but no bleeding on probing;

2 – moderate inflammation – redness, oedema and glazing, bleeding on probing;

3 – severe inflammation – marked redness and oedema, ulceration with tendency toward spontaneous bleeding.

The scores of the four areas of the tooth were summed and divided by four to calculate the GI for the tooth. The GI of the individual was obtained by adding the values of each examined tooth and dividing by the number of teeth (6).

3.4 Statistical analysis

The dependent and independent variables used in Papers I-III are presented in Table 3 and Table 4, respectively.

Table 3. List of the dependent variables used in Papers I-III

Paper	Dependent variable	Type of dependent variable
I	1. DMFT index (dental caries experience)	discrete (the sum of DT, MT, and FT)
	2. SiC group	binary (0=not in the SiC group; 1=in the SiC group)
II	DAS score	discrete (the sum of the four DAS items)
III	OHIP-14 score	binary (0=without low OHRQoL*; 1=with low OHRQoL)

* Students who responded "occasionally", "fairly often", or "very often" for at least one item on the OHIP-14 were categorised as having low OHRQoL.

Abbreviations: DMFT index, decayed missing filled teeth index; DT, decayed teeth; MT, missing teeth; FT, filled teeth; SiC, Significant Caries; DAS, dental anxiety scale; OHIP-14, Oral Health Impact Profile with 14 items; OHRQoL, oral health-related quality of life.

Table 4. List of the independent variables used in Papers I-III

Groups of independent variables	Independent variables	Papers
Socio-demographic and socioeconomic variables	1. Age group (years)	I-III
	2. Sex	I-III
	3. Faculty	I-III
	4. Place of childhood residence	I-III
	5. Location of finishing school	I
	6. Eligible for free education	I, II
	7. Subjective SES	I-III
	8. Type of accommodation	I
	9. Mother's education	I-III
OH behaviour	1. Regularity of dental visits	I-III
	2. Frequency of tooth-brushing	I-III
	3. Toothpaste	I-III
	4. Skipping tooth-brushing	I-III
Self-reported general characteristics	1. Self-assessed general health	II
	2. Self-assessed psychological health	II
	3. Coping with different aspects of life	II
Self-reported OH characteristics	1. Self-assessed OH	II, III
	2. Experienced pain in mouth	II
	3. Experienced gum bleeding during tooth-brushing	II
	4.Self-assessed dental aesthetic	III
	5.Satisfaction with mouth and teeth	III
Clinically-assessed OH	1. DMFT index or DT, MT, and FT	II, III
	2. OHI-S	II, III
	3. GI	II, III

Abbreviations: SES, socioeconomic status; OH, oral health; DMFT index, decayed missing filled teeth index; DT, decayed teeth; MT, missing teeth; FT, filled teeth; OHI-S, Simplified Oral Hygiene Index; GI, Gingival Index.

The statistical methods applied in Papers I-III are summarised in Table 5. All statistical tests were two-sided, and a p-value less than 0.05 was considered statistically significant.

Table 5. Overview of the statistical analyses applied in Papers I-III

Statistical method	Paper I	Paper II	Paper III
Mann-Whitney U test	+	+	+
Kruskal-Wallis test	+	-	-
Chi-square test	+	-	+
Negative binomial hurdle model	+	-	-
Multivariable binary logistic regression	+	-	+
Simple and multivariable Poisson regression	-	+	-
Statistical programme package	IBM SPSS Statistics for Macintosh version 23.0 (IBM Corp., Armonk, New York, USA) and STATA version 14.0 (StataCorp, College Station, Texas, USA)		

To ensure reliability of the obtained clinical data, Cohen's Kappa and intraclass correlation coefficients were calculated for dichotomous (DT and non-DT) and quantitative data (DMFT index and GI), respectively. To assess the reliability of the DAS and OHIP-14 scores, the inter-item correlation coefficient (Cronbach's alpha), the average of the inter-item correlation, and the corrected item-total correlations were determined. For missing values analysis, Little's missing completely at random (MCAR) test was used [105].

3.5 Ethical considerations

Before enrolment into the study, the students received verbal information from the researcher (SND) and written information in the form of an invitation letter, which included the objectives of the study, the criteria for participation, the description of study stages, the potential advantages and disadvantages for study participants, utilisation of the

information collected, a statement of voluntary participation, the right of the study participants to access and delete data, the study schedule, funding, and how results would be reported (Appendix A). In Stage 1, written informed consent was obtained from every participant. The researcher (SND) also gave assurance of confidentiality and stressed that participation was voluntary and participants could withdraw from the study at any time without giving any reason. In Stage 2, clinical dental examinations were executed free of cost and with minimal of pain or discomfort. All participants received the results of their dental health check and instructions for oral hygiene immediately. Students in need of dental treatment were given individualised referrals for further dental health care. Ethical approval for this study was obtained from the Regional Ethical Committee of Norway (2015/1788/REK nord) and the Ethical Committee of the NSMU, Russia (№ 05/10-15 from 19.10.2015).

Chapter 4. Main results

This chapter describes the key results of the thesis based on the study aims. Figure 6 shows the main findings presented in Papers I-III.

ASSOCIATED FACTORS

Medical students	1. Female sex 2. Lower mother's education 3. Poor self-assessed OH
Dental students	1. Female sex 2. Irregular dental visits 3. Infrequent tooth-brushing 4. Experienced pain in mouth

Higher DA
(higher DAS score)

In dental students, higher number of MT due to dental caries

1. Older age
2. Female sex
3. High subjective SES
4. Skipping tooth-brushing
5. Regular dental visits

Higher dental caries experience (higher DMFT index)

1. Rural place of childhood residence
2. Female sex
3. Poor dental aesthetic
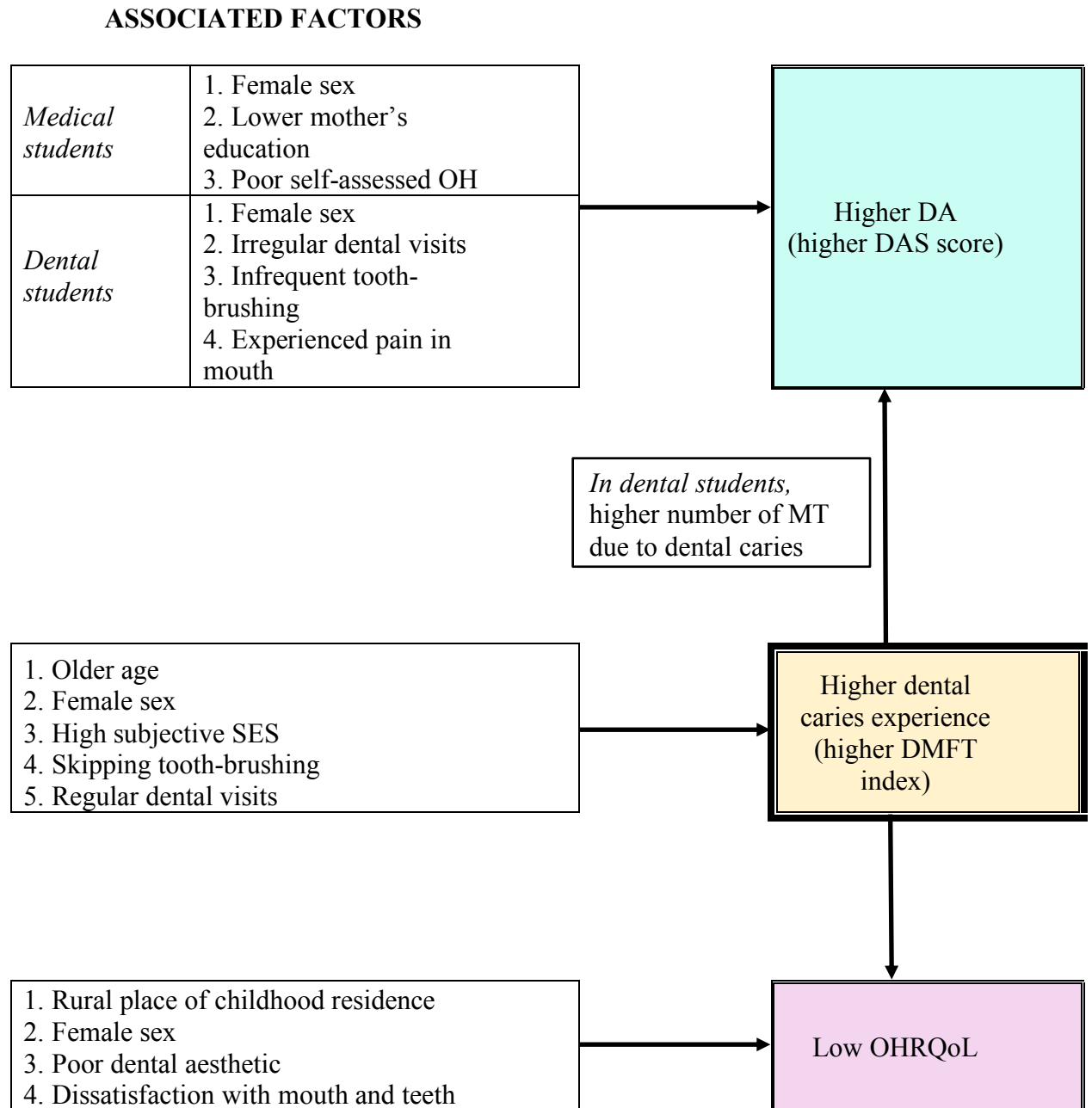4. Dissatisfaction with mouth and teeth

Low OHRQoL

Figure 6. Main findings of Papers I-III.

Abbreviations: OH, oral health; DA, dental anxiety; DAS, dental anxiety scale; MT, missing teeth; SES, socioeconomic status; DMFT index, decayed missing filled teeth index; OHRQoL, oral health-related quality of life.

4.1. Dental caries experience and its determinants (Paper I)

The prevalence of dental caries (DMFT index >0) among the medical and dental students was 95.7% and 96.4%, respectively. The overall mean DMFT index was 7.58 (standard deviation [SD] 4.4): DT 0.61 (SD 1.2), MT 0.12 (SD 0.4), and FT 6.84 (SD 4.1). FT accounted for 89.8% and 91.0% of dental caries experience in medical and dental students, respectively. The SiC index was 12.50 (SD 3.0): DT 0.99 (SD 1.5), MT 0.26 (SD 0.6), and FT 11.25 (SD 2.9), with FT accounting for 90.0%. The DMFT cut-off point in this subgroup was 9, thus all students with a DMFT index ≥9 were placed in the SiC group.

In negative binomial hurdle analysis, regular dental visits were significantly associated with lower odds of being in the dental caries-free group (odds ratio [OR]=0.38, 95% CI: 0.18-0.82). Furthermore, students who reported regular dental visits had an adjusted DMFT index that was 1.22 (95% CI: 1.10-1.36) times higher than that observed in those who did not report such visits. The DMFT index of students aged 21-25 years was 1.09 (95% CI: 1.01-1.18) times higher than that predicted in their younger counterparts, after adjustment for other variables in the model. Being female (incidence rate ratio [IRR]=1.10, 95% CI: 1.01-1.20), skipping tooth-brushing (IRR=1.09, 95% CI: 1.00-1.19), and high subjective SES (IRR=1.11, 95% CI: 1.02-1.21) were also found to be significant independent determinants of high DMFT index. Significant predictors of being placed in the SiC group were older age (OR=1.41, 95% CI: 1.03-1.92), high subjective SES (OR=1.57, 95% CI: 1.13-2.19), and regular dental visits (OR=2.34, 95% CI: 1.56-3.51).

4.2. Dental anxiety: assessment of prevalence and associated factors (Paper II)

Medical students had a higher mean DAS score than dental students: 8.81 (SD 3.23) vs. 6.73 (SD 2.36), p<0.001. The prevalence of high DA (DAS score ≥13) was 13.7% and 2.2% in medical and dental students, respectively (p<0.001). Compared to dental students,

medical students were older (44.8% vs. 35.4% in the age group of 21-25 years; p=0.013), were more often eligible for free education (87.9% vs. 67.7%; p<0.001), and reported mother's education as university level less often (50.2% vs. 58.9%; p=0.023). When looking at OH behaviour, differences were found between medical and dental students who reported regular dental visits (77.5% vs. 84.9%; p<0.001), brushed their teeth twice a day or more (75.4% vs. 86.7%; p<0.001), skipped tooth-brushing (37.9% vs. 28.1%; p=0.007), and used a toothpaste with fluoride (40.3% vs. 56.5%; p<0.001). Compared to dental students, medical students more often reported poor OH, experienced pain in their mouths, and experienced gum bleeding during tooth-brushing (45.3% vs. 25.6%, p<0.001; 53.3% vs. 34.0%, p<0.001; 47.9% vs. 36.5%, p=0.003, respectively). Dental students had fewer DT than medical students (0.49 vs. 0.68; p=0.020), but no differences were found in the number of MT, FT, or the DMFT index. The OHI-S and GI were higher in medical than in dental students: 1.21, SD 0.53 vs. 1.01, SD 0.49, p<0.001 and 0.32, SD 0.25 vs. 0.22, SD 0.22, p<0.001, respectively.

The multivariable Poisson analysis with DAS score as the dependent variable showed that, in medical students, poor self-assessed OH (IRR=1.15, 95% CI: 1.08-1.23), lower mother's education (IRR=1.13, 95% CI: 1.05-1.20), and female sex (IRR=1.11, 95% CI: 1.02-1.20) were associated with higher DAS score when adjusted for regularity of dental visits, experienced pain in mouth, and GI. In dental students, being female (IRR=1.16, 95% CI: 1.06-1.26), reporting irregular dental visits (IRR=1.19, 95% CI: 1.07-1.32), infrequent tooth-brushing (IRR=1.17, 95% CI: 1.04-1.32), having experienced pain in one's mouth (IRR=1.09, 95% CI: 1.01-1.18), or having a higher number of MT due to dental caries (IRR=1.13, 95% CI: 1.03-1.24), were independently associated with a higher mean DAS score, adjusted for self-assessed general health and number of DT. All variables in the final models explained 12.7% of the variation in the response variable in both medical and dental students.

4.3. Oral health-related quality of life in medical and dental students (Paper III)

The mean OHIP-14 score was 4.63 (SD 4.90, range: 0-34). More than half of the students (53.6%) reported low OHRQoL; the mean number of items with a reported frequency of "occasionally" or more often was 1.27 (SD 1.77; range: 0-11). The highest mean scores were observed for the dimensions physical pain and psychological discomfort, which were also the most frequently reported dimensions with an impact on OHRQoL. With respect to single OHIP-14 items, the prevalence of low OHRQoL varied from 1.7% (for the item "unable to function" in the dimension handicap) to 37.0% (for the item "painful aching in mouth" in the dimension physical pain).

Multivariable logistic regression with the dependent binary variable (0=without low OHRQoL and 1=with low OHRQoL) showed that female sex (OR=1.48, 95% CI: 1.00-2.19), rural place of childhood residence (OR=1.56, 95% CI: 1.06-2.28), poor self-assessed dental aesthetic (OR=1.75, 95% CI: 1.16-2.64), dissatisfaction with mouth and teeth (OR=2.51, 95% CI: 1.68-3.77), and high DMFT index (OR=1.05, 95% CI: 1.01-1.09) were associated with higher odds of having low OHRQoL when adjusted for age group, faculty, self-assessed OH, and OHI-S. The most important predictors of low OHRQoL were satisfaction with mouth and teeth and self-assessed dental aesthetic. All independent variables in the final model explained 20.6% of the variation in the dependent variable.

4.4. Additional results not included in Papers I-III

In the present study, from a total of 807 students who participated in Stage 2, 56 (6.9%), 100 (12.4%), and 141 (17.5%) students had missing data in Papers I, II, and III, respectively. Little's MCAR tests were insignificant (p=0.214, p=0.274, and p=0.162, for the sets of variables with missing values included in Papers I, II, and III, respectively,

assuming that the data are MCAR). We also explored the associations between clinically-assessed OH (DMFT index) and self-reported OH characteristics (Table 6).

Table 6. Association between clinically-assessed OH (DMFT index) and self-reported OH characteristics

Self-reported OH characteristics	All n*	DMFT index=0, (%)	p**	DMFT index >0, mean (SD)	p***
Self-assessed OH			0.001		< 0.001
Good	478	(5.9)		6.87 (3.73)	
Poor	275	(0.7)		9.52 (4.54)	
Experienced pain in mouth			< 0.001		< 0.001
No	411	(6.8)		7.27 (3.94)	
Yes	342	(0.6)		8.56 (4.49)	
Self-assessed dental aesthetic			0.031		0.010
Good	461	(5.2)		7.44 (3.80)	
Poor	292	(2.1)		8.53 (4.79)	
Satisfaction with mouth and teeth			0.169		< 0.001
Yes	326	(5.5)		7.06 (3.99)	
No	320	(2.8)		8.78 (4.52)	
Difficult to answer	107	(2.8)		7.56 (3.62)	
Experienced gum bleeding during tooth-brushing			0.065		0.210
No	429	(5.1)		7.68 (4.18)	
Yes	324	(2.5)		8.12 (4.34)	

* total number of the students included in the analysis is 753 due to missing data in the categories of self-reported OH characteristics;

** p-value from the Chi-square test; ***p-value from the Mann-Whitney U test for two independent groups and the Kruskal-Wallis test for three independent groups.

Abbreviations: OH, oral health; DMFT index, decayed, missing, and filled teeth index.

Students who reported poor self-assessed OH, poor self-assessed dental aesthetic, and experienced pain in mouth had a higher mean DMFT index and were placed in the dental caries-free group less frequently compared to those who reported good self-assessed OH, good self-assessed dental aesthetic, and did not experience pain in mouth, respectively.

There were also statistically significant differences in the mean DMFT index in students

with dental caries experience between categories of satisfaction with mouth and teeth.

Chapter 5. Discussion

5.1. Methodological challenges

5.1.1. Students as a vulnerable group for research: assessment of ethical issues

Students in secondary education, university students, children, pregnant women, and prisoners may be considered a vulnerable group for research [106, 107]. Although students are a convenient and available study sample, there are several potential ethical issues to consider when enrolling students into a study, such as voluntary participation, conflict of interest, informed consent, confidentiality, and costs-benefit ratios.

"Voluntary participation is only truly voluntary if not participating has no consequences for the student" [108]. If students are recruited for research by the same persons who are responsible for their education, the risk of coercion to participate should be taken into consideration [106, 108, 109]. In such circumstances, the researcher may exert pressure on students to participate, and retaliate against those who refuse to participate by giving lower grades, or poorer learning opportunities, which could lead to slower student progress [110]. This pressure may be especially sensitive in relation to medical and dental students, as their study situation is highly dominated by one-to-one instruction in the clinic. Moreover, if a student agrees to participate in a study in order to obtain extra credits, better grades, better recommendations, a better workplace situation, etc., it makes their participation not fully voluntary [107, 108]. There is an opinion that, in order to avoid a conflict of interest, researchers should only perform the role of researcher, not the role of researcher and teacher simultaneously [108, 111]. For the present project, these challenges were discussed by researchers at the NSMU and UiT at the planning stage, and all relevant comments were taken into consideration to the best of our ability.

The current PhD project involved medical and dental students of the NSMU, and recruitment was carried out at the end of a randomly-selected curriculum lecture for each

year of education. The researcher (SND) in this study is not responsible for giving lectures or practical classes to medical students, nor does he have any position of power in the researcher-participant relationships. Moreover, by the time students had to decide whether or not to participate in the study, the lecturer had left the lecture hall, thus (s)he could not influence the students' choice. In contrast, theoretically, the dental students might be vulnerable to being coerced into participation in the study, but such probability was minimal. One reason for that was that at Stage 1, the invitation to participate was addressed to the group of students (37-182 students) who attended the lecture, not to each student individually. This approach meant that researcher was not able to determine which students declined to participate, as in individual recruitment [112], and provided for greater anonymity. Students were informed that only those who agreed to participate needed to sign an informed consent form and fill in the questionnaire, while students who refused to participate could return the unfilled questionnaire and informed consent form, and leave the lecture hall freely. Moreover, even if the students completed the questionnaire, if they did not sign the informed consent form or give their mobile phone numbers, they were considered to have refused to participate. Therefore, the researcher could not identify who agreed to participate in the study and who did not when the students completed the questionnaire. No attempt was undertaken to follow up with students who were absent from the lecture or who refused to participate at Stage 1. Nevertheless, group recruitment may violate the privacy of students and increase peer pressure when the student's decision becomes evident to his/her fellow students [108]. For Stage 2, which included the clinical dental examination, we applied an individual approach, inviting students using their mobile phone numbers. We did not know their names, and students were still able withdraw from the study despite their agreement to participate in Stage 1. Therefore, we may conclude that voluntary participation in this study was not violated.

Another important point is reward policy. To increase the response rate, at the end of the data collection period (June 2016) a small prize drawing was held for study participants, with the winners picked randomly by the researcher (SND). To ensure transparency in determining the winners, all participating students were informed in advance about the date and place of the drawing, so they could come and monitor the process. Three medical students and three dental students were present during the selection of winners. Two students who participated in Stage 1 and two other students who participated in Stage 2 won 10,000 Russian rubles (about 1200-1300 Norwegian kroner) each.

Obtaining informed consent for study participation is one of the fundamental ethical aspects of any research involving human subjects [113]. Informed consent includes the information component and the consent component. The information provided should be comprehensible and adequate according to the study protocol. The consent must be voluntary (without any pressure) and decision-competent [107]. To participate in the present study, students had to sign the informed consent form (Appendix A). An important issue is the time needed for a student to make a decision about participation. In our study, we did not perform any invasive procedures that are associated with health risks which would have required a lot of time for study participants to make the right decision for them. Moreover, students could withdraw from the study at any time, without stating any particular reason. Withdrawal would not have any consequences for her/his further training, and that fact was also stated in the invitation letter (Appendix A).

Research must ensure the confidentiality of information received from study participants [107]. Anonymity may be considered a possible guarantee of confidentiality. Full anonymity can be achieved when a researcher does not link the information obtained from a study with any specific participant [110]. Nevertheless, in many studies, researchers have linked information on study participants from different sources (for example, in the

present study, information from the structured, self-administered questionnaires and the results from the clinical dental examination). In such cases, identification may be required. In our study, to ensure confidentiality, we used the following measures:

- Selection of participants from a large group; the invitation to participate in the study was addressed to all students who attended the recruitment lecture, not to each student individually. Applying this approach, we did not know exactly who agreed to participate and who did not.

- As we did not use the names of participants, we used identification numbers to link the information obtained from the questionnaires to that from the clinical dental examination.

- Students who agreed to participate were asked to give their mobile phone numbers so we could contact them and set a date and time for Stage 2. The mobile phone numbers were recorded on paper only; they were not included in the dataset. The Regional Ethical Committee of Norway and the Ethical Committee of the NSMU, Russia, accepted the method of selecting potential participants to Stage 2. Only the researcher (SND) had access to the phone numbers. Moreover, according to Russian law, special permission from security services is needed to identify someone using his/her phone number.

- Registered data were used in accordance with the study objectives. No personal information on study participants, including their mobile phone numbers, was given to any other organisation or person.

- The completed questionnaires with the mobile phone numbers are stored in a locked room at the NSMU and will be destroyed when the project is finished.

The costs-benefit ratio is another important issue in the evaluation of ethical problems in research. A study may be considered ethical if there is a favourable costs-benefit ratio [107]. From an individual perspective, our participants received the results of their OH

check-ups immediately. The clinical dental examination was free of cost for the student and comprised minimal pain or discomfort; students in need of dental treatment were referred to the necessary services. All study participants also received individual oral hygiene instructions. Participation in Stage 1 and Stage 2 did not require a lot of participant's time, lasting approximately 15-20 and 40-45 minutes, respectively. Although student participation in research implies no guarantee of improved education, because the students did not receive detailed information on the research questions, study design, applied statistical methods, etc. [108], it cannot be ruled out that the experience obtained from study participation may have a positive future impact on health professionals who go into research (voluntary participation, need for informed consent, etc.). From the social and scientific perspectives, the obtained information on OH and factors associated with OH in Russian young adults are necessary for planning and executing preventive measures.

5.1.2. Study design

This is a cross-sectional study, which was conducted to estimate the prevalence of investigated characteristics (dental caries, DA, and low OHRQoL) in Russian medical and dental undergraduate students in North-West Russia. Alongside data about the outcomes, information was also collected on individual factors (socio-demographic, socioeconomic, OH behaviour, self-reported general health and OH characteristics). The current study provided a "snapshot" of the outcomes and the associated factors over a short time period (during the 2015-2016 academic year). The estimated associations between risk factors and the outcomes may be useful in generating hypotheses for future research [114]. Nevertheless, no causal relationships in the association between outcome variables and independent factors, nor trends in the prevalence of outcomes over time, can be determined.

5.1.3. Internal validity

Validity is an important consideration in the interpretation of results from epidemiological studies [115]. There are two types of validity: internal and external [116, 117]. Internal validity refers to the strength of the study inferences, which are related to the absence of systematic errors: selection bias, information bias, and confounding [115-117].

Selection bias is present when study participants have different probabilities of being included in the study [115]. For the current study, we selected medical and dental students from two faculties who attended the recruitment lectures. It cannot be argued with certainty that there are systematic differences in relevant study characteristics between the students who did and did not attend the recruitment lectures. The same may be assumed in relation to the medical students who were invited to participate and those from other, smaller faculties and departments of the NSMU who were not invited. For Stage 2, to achieve the desired statistical power, we invited all dental students and a stratified random proportionate sample of medical students (who were a group nearly double in size compared to dental students) from Stage 1. Nonetheless, the final sample was not well balanced, with a lower response rate in medical students (57.6%) than dental students (79.3%) in Stage 2. This may have led to an underestimation of DA and OH problems in medical students. Moreover, the OHIP-14 scores might be positively overestimated due to the overall response rate of 64.9% for Stage 2.

Information bias results from errors in the measurement of study variables [117, 118]. In the present study, data were obtained from the clinical dental examination and from the structured, self-administered questionnaires. The clinical dental examination was performed on all study participants, and information on dental caries experience, oral hygiene, and gingival soft tissue status was recorded. Dental caries experience was measured by the DMFT index, which was documented during the examination according to WHO recommendations [7]. Although the DMFT index has been used for 80 years and

is one of the most common tools used in epidemiological dental studies, it has several limitations [119]. The DMFT index only counts teeth with carious lesions extending into the dentin; enamel carious lesions are not counted, nor is the activity level of carious lesions recorded. Moreover, it was difficult to confirm the reason for tooth extraction at the time of the clinical dental examination. The DMFT index does not count sealants, but can overestimate dental caries experience by taking into consideration teeth with cosmetic restorations. The DMFT calculation gives equal weight to MT, restored teeth, and teeth with untreated dental caries. In addition, in the current study, only visual and tactile methods were applied to detect dental caries; radiographs were not taken, which could lead to an underestimation of dental caries. An Israeli study conducted among participants aged 18-20 years showed that average DMFT index and DT with radiographs were 1.42 and 1.75 higher, respectively, than values obtained without radiographs [120]. Indeed, when radiographs are used, early and secondary proximal dental caries, as well as aesthetic restorations, may be more frequently detected. Nevertheless, radiographic equipment is not always available in many epidemiological studies. Finally, DMFT index may have a skewed distribution in the general population. To solve this problem and focus on individuals with the highest DMFT index, the SiC index can be calculated [102], and that was done in the present study. Oral hygiene was assessed by the OHI-S [103], which has been previously validated and is one of the most commonly used tools in epidemiological studies and clinical practice [103, 121]. The GI was applied to evaluate qualitative changes in the gingival soft tissue [104]. The GI has also gained wide acceptance as a simple, accurate method to assess gingival health in epidemiological and clinical research [122].

When considering the instruments available to measure DA, the DAS and MDAS are the most frequently used tools in young university students. Compared to the DAS, the MDAS has identical response options for all questions (from not anxious to extremely anxious) and includes one additional question about anxiety of dental injection. This item

on injection will probably also reflect general syringe phobia among respondents and blend in with the total score. As the distribution of any kind of phobia is unknown in the young population of North-West Russia, we considered the DAS to be the most appropriate measurement for the present population of medical and dental students. Nevertheless, some researchers maintain that Corah's DAS does not consider the theoretical structure of DA and that its response categories are not mutually exclusive [30]. In the current study, the Russian version of the DAS seemed to have acceptable psychometric properties. The fact that only three of the 807 DAS respondents omitted one item adds support to the face validity of the instrument, implying that it subjectively appears to measure what it is supposed to measure [123]. Moreover, students who confirmed DA as their reason for not scheduling dental visits had significantly higher DAS scores than students who reported "other" reasons for not going to a dentist (12.5 vs. 8.5, p<0.001), which provided evidence of criterion validity, i.e., "the degree of correspondence between a test measure and one or more external referents (criteria)" [123].

To assess OHRQoL, we used the Russian language version of the OHIP-14, an instrument that has been validated in another adult Russian population [81]. Although the instrument was validated among middle-aged adults with periodontal diseases, the results of the present study also provide evidence of the good construct validity of OHIP-14 items when applied to young adults; the OHIP-14 scores discriminated significantly between students with good and poor self-assessed OH (mean 3.6 and 6.6, respectively). Nevertheless, OHRQoL measures, including OHIP-14, have some limitations, as they focus on negative impacts only and define the frequency of impacts of oral diseases, but do not demonstrate their true significance with regard to quality of life [66, 124]. Finally, in the present study, information on OH behaviours, SES, general health, psychological health, and dental aesthetic was self-reported; thus, the possibility of social desirability bias due to under- or over-reporting cannot be ruled out.

When an association between an exposure X and an outcome Y is investigated, we need to assume and check whether there is a third variable (or group of variables) that is associated with both X and Y, and that thus may influence the observed X-Y association. This third variable is usually designated as a confounding variable (or confounder) [115]. Interaction (or effect modification) exists when the relationship between two variables is different for different levels (or presence/absence) of a third variable [115]. To control for confounders and to assess interactions, multivariate analysis (modelling) and stratification are often used [115]. In all three papers that comprise this thesis, we used multivariable analysis to find adjusted associations between the outcomes of interest (DMFT index, DA, and OHRQoL) and the selected predictors. Moreover, as expected, we found a different level of DA in medical and dental students, and significant interactions between "faculty" and "mother's education", and "faculty" and "regularity of dental visits" in relation to the DAS scores. Given that, we performed the statistical analysis for medical and dental students separately. Nevertheless, the selection of predictors, which should be included in multivariable analyses, is controversial and represents a difficult task in epidemiological analysis [125]. Theoretical or empirical strategies may be used to identify potential confounders or effect modifiers. While theoretical identification is based on results of previous studies or expert knowledge, empirical strategies select factors from the current working dataset [126]. In the present study, we endeavoured to apply both strategies, taking into consideration factors which were found to be significant in other studies, as well as results of univariable analyses, in which the crude associations between outcomes and predictors were determined. Nevertheless, we did not take into account other factors that are potentially associated with the outcomes studied, for example, consumption of sugars including soft drinks, content of fluoride in drinking water, and smoking.

5.1.4. External validity

External validity or generalisability reflects the extent to which the obtained results from the study sample (study population) are applicable to the target population or other persons in other places and at other times [116, 117]. Although internal validity is a prerequisite to generalise findings, the internal validity of a study does not guarantee its external validity [118]. In the present study, we included only medical and dental students from the NSMU; therefore the generalisability of the results to other young adults in North-West Russia may be questioned. Medical and dental students are, to some extent, a prosperous group of young people with regard to SES and health-related issues, including OH. However, our participants reported a subjective SES of regular/good (median on the MacArthur scale was 6.0), indicating that they perceived their family to belong to a group not far from the average in Russian society. In addition, although more than three-quarters of the students reported regular dental visits, one-third of the students reported skipping tooth-brushing, which, to some extent, may reflect poorer OH behaviour than we expected. Nevertheless, information on SES in the present study was self-reported; thus the possibility of bias due to under- or over-reporting cannot be excluded.

5.1.5. Reliability

Along with validity or lack of bias, reliability is another concern in when looking at the quality of a study [115]. Reliability (precision, reproducibility, repeatability) reflects "consistency of measurement over time or stability of measurement over a variety of conditions" [123]. Typical methods to assess reliability are inter-rater (or intra-rater) reliability, test-retest reliability, and internal consistency [115, 123]. In the present study, data from the clinical dental examination were obtained by one calibrated clinical investigator (SND). To ensure intra-rater reliability, 54 of the study participants were clinically re-examined. The resulting Kappa statistic for DT and non-DT teeth was 0.804

(95% CI: 0.641-0.967), signifying a strong agreement [127]. Intraclass correlation coefficients for the DMFT index and GI were 0.989 (95% CI: 0.981-0.993) and 0.828 (95% CI: 0.721-0.896), respectively, which implies that the data are reliable. Given the short amount of time set aside for each re-examination, we did not ask the re-examined participants to complete the Stage 1 and Stage 2 questionnaires a second time. Therefore, we could not assess the test-retest reliability of the information given by the students. Internal consistency measures the reliability within the instrument by assessing how well test components that reflect the same construct give similar results. These estimates are based on the intercorrelations among all the single test components (items) within the instrument [123]. We assessed the internal consistency of the DAS and OHIP-14, and the results showed good reliability, with a high inter-item correlation coefficient (Cronbach's alpha=0.85) for both instruments. In addition, we found average inter-item correlations of 0.59 (range: 0.47-0.72) and 0.28 (range: 0.10-0.66) for the DAS and OHIP-14 items, respectively, with no negative correlations. Moreover, for the DAS and OHIP-14 items, the corrected item-total correlations ranged from 0.63 to 0.78 and from 0.27 to 0.66, respectively, and all values were above the minimum recommended level of 0.20 for including an item into a scale [128].

5.1.6. Statistical analysis

Missing data are a challenge in almost all biomedical research; they can reduce statistical power and produce biased estimates that in turn may lead to invalid conclusions [129]. The risk of bias depends on the reasons for missing data, which are commonly considered to be MCAR, missing at random, and missing not at random [105, 130, 131]. When the assumption of MCAR is fulfilled, i.e., when there are no systematic differences between the missing values and the observed values, and the sample size is large enough, complete-case analyses will not lead to bias [129]. In the current study, the data may be assumed to

be MCAR given the insignificant Little's MCAR tests. Therefore, we applied a complete-case analysis, where only students with no missing data in questionnaires were included in the statistical analyses. Moreover, in Paper I, all missing values were in the predictor variables. In these circumstances, and under the assumption that the reasons for the missing data are unrelated to the outcome, we might get unbiased estimates [130]. The same applies to Paper II, in which only three students had missing values for the outcome variable. However, in Paper III there was missing data for both the outcome and the predictors, and thus the possibility of biased estimates cannot be ruled out. The fact that students with missing OHIP-14 data (9.7%) more often had poor self-assessed dental aesthetic, dissatisfaction with their mouth and teeth, and poor clinically-assessed OH might have biased our estimates.

In the present study, we assessed how the selected factors were associated with the outcomes using regression analysis. The choice of regression model depended on the type of outcome and its distribution. The Poisson model, the negative binomial model, the zero-inflated models, and the hurdle models were taken into account. In Paper I, over-dispersion and an excess of zeros were found in the outcome (DMFT index) distribution, given the significant likelihood-ratio test of alpha and the significant Vuong test, respectively [132]. In these cases, the zero-inflated negative binomial model or the negative binomial hurdle model is recommended [133]. Differences between the zero-inflated negative binomial model and the negative binomial hurdle model are often small, but the negative binomial hurdle model has an easier and less misleading interpretation [133]. Interestingly, despite many earlier citations, a recent work by Wilson has shown that the Vuong test is inappropriate for testing zero inflation [134]. Nevertheless, the Akaike information criterion and the Bayesian information criterion may also be used to choose between a standard model and a zero-inflated model; the model with lower values of these criteria is the one that fits the data better. In the present study, the lowest values of the information

criteria were found for the zero-inflated negative binomial model and the negative binomial hurdle model among other models considered. In Paper II, the DAS score was the dependent count variable, with observed values from 4 to 19. Multivariable Poisson regression was used, given the non-significant test for alpha; in this case, negative binomial regression did not fit our data better than Poisson regression. In Paper III, the dichotomised dependent variable was the outcome variable, therefore multivariable binary logistic regression was applied. The same type of regression analysis was also used in Paper I to evaluate the ORs of being placed in the SiC group.

5.2. Discussion of main results

5.2.1. Prevalence of dental caries and dental caries experience

The prevalence of dental caries among medical and dental students in the present study (95.7% and 96.4%) was higher than that reported in Yemen (81.7% and 85.0%) [18] and in a longitudinal study in Spain (82.2% and 83.0% at the start and 91.1% and 87.2% at the end of the study) [93]. A similar pattern was observed in relation to dental caries experience, as measured by the high mean DMFT index of 7.6, which shows that the dental health of medical and dental students in North-West Russia is worse than that reported in Spain (3.38-5.91) [93], India (1.16-1.96) [20], and Yemen (3.92-4.27) [18].

Other Russian studies among Perm medical students published in 1987 and Moscow students published in 2009 found that only 1.5% [98] and 0.7% [23] were dental caries-free, respectively, and the DMFT index was even higher than ours: 9.3 and 10.4, respectively. Direct comparison of these results with our data must be done with caution due to differences in population characteristics, recruitment, and the area covered. Nonetheless, one may speculate that dental health in young adults in Russia has not significantly improved despite positive socioeconomic changes in Russia over the past 20-30 years [135].

In the current study, FT constituted the main fraction of the DMFT index in both medical (89.8%) and dental (91.0%) students. This fraction was much higher than that in medical and dental students from India (21.4% and 34.5%) [20] and Yemen (54.6% and 49.9%) [18]. Other Russian studies revealed that FT constituted only 60.7% and 42.0% of the DMFT index in Perm medical students [98] and in Moscow students [23], respectively. The relatively high availability of dental treatment and willingness of our medical and dental students to seek dental care is one possible explanation for the high fraction of FT we observed. Indeed, in the current study 77.8% of the students reported regular dental visits. This might be explained to some extent by the fact that medical and dental students at NSMU undergo medical examinations, including dental check-ups, before they start the clinical aspect of their education. Moreover, the threshold for dental caries treatment among dentists in Russia should be investigated to better understand the high fraction of FT in our study population.

5.2.2. Dental anxiety in medical and dental students

The present study revealed that the prevalence of high DA and mean DAS score were higher in medical than in dental students of the NSMU. This was expected and agrees with results from other studies [52, 53, 57]. One obvious explanation is that the level of knowledge about dentistry, severity of dental diseases, and possible inconvenience while receiving dental treatment is higher among dental students. They get more information about DA during their training, they learn how to communicate with fearful dental patients and help them cope with DA, which may result in a better understanding of their own DA, as well as help them cope with it. Our findings may also indicate that the curriculum of medical studies at the NSMU does not include enough information on dental diseases and treatment.

Researchers have used global questions [55], different scales [51, 52, 60, 62], or different DAS score cut-offs to assess DA [57]. This may complicate the comparability of these studies with our results, although conversion tables can be used to compare our findings with MDAS results from other studies [136]. Nonetheless, levels of DA in our medical and dental students were found to be lower [52, 54, 57, 59] or comparable [51] with those reported in studies among other medical or dental students. To some extent, that might be expected given the dominance of FT in the structure of the DMFT index (overall, more than 90%) in our medical and dental students.

5.2.3. Oral health-related quality of life

More than half of the medical and dental students in our study sample had low OHRQoL. The severity (mean OHIP-14 score 4.6) and prevalence of low OHRQoL (53.6%) in our medical and dental students is similar to that reported in Brazilian dental students (4.5 and 45.0%) [78] and Chinese young adults (6.3 and 50.6%) [76]. In contrast, an Indian study found a mean OHIP-14 score of 13.4 and 10.7 in 1st- and 4th- year dental students, respectively [79], while a Japanese study reported a mean OHIP-14 score of 1.9 in 1st-year university students [74]. Evaluation of quality of life, including OHRQoL, depends on an individual's expectations and experiences, which vary according to social, psychological, socioeconomic, demographic, and other cultural factors [137]. Someone with poor OH and low expectations may not consider themselves to have low OHRQoL and report being satisfied. In contrast, individuals who have good OH and high expectations may experience low OHRQoL due to even minor oral problems and report being dissatisfied [137]. Previous studies showed that 80.0% of Brazilian dental students were satisfied with their mouth and teeth [78]; only 15.1% of Chinese young adults [76] and 36.8% of Japanese university students [74] reported good OH, while 44.4% and 63.8% of our medical and dental students were satisfied with their mouth and teeth and reported good OH,

respectively. To compare these results, we need to know the frames of reference of the respective study samples, i.e., their level of knowledge and the expectations and experiences they used when assessing their OH, satisfaction, and OHRQoL. Qualitative research should be designed to answer these questions [138]. Nevertheless, in the present study we found that the OHIP-14 dimensions of physical pain and psychological discomfort were the biggest drivers of low OHRQoL, which is in line with all aforementioned studies [74, 76, 78, 79]. Therefore, one may assume a similar pattern of OHRQoL exists in young adults in different countries.

5.2.4. Socio-behavioural factors associated with dental caries experience, dental anxiety, and oral health-related quality of life

In agreement with the world trend, the DMFT index in the present study increased significantly with age (Paper I), as dental caries is an irreversible, accumulative disease. Also in line with international findings [6, 17, 21], female sex was found to be associated with a higher DMFT index (Paper I). Researchers explain this fact through a complex aetiology, including hormonal fluctuations, genetic variations, different saliva composition and flow rate, dietary habits, and social roles in the family [139, 140]. Moreover, previous studies [52, 55-58] have documented that female students have higher DAS scores than male students, and this was the case in the present study (Paper II) among students from both faculties. It has also been postulated that women are more susceptible to perceived threats or danger, and that they may describe their fears more openly; while men may be more emotionally stoic and hide their anxieties [141]. In addition, female students showed higher odds of having low OHRQoL than male students (Paper III). This is in contrast with other studies, which found no sex differences in OHRQoL in young adults [71, 73, 76-78, 80]. One possible explanation is that women are more likely to report more severe and frequent pain than men, although the mechanisms behind this phenomenon remain

understudied [142]. Moreover, one may speculate that women have a higher expectation of good OHRQoL and are more concerned about their appearance, thus they may describe their psychological discomfort more openly than men.

OH inequalities associated with SES have been widely observed in different age groups [143]. It has also been reported that persons with low SES have a higher risk of poor dental health in terms of dental caries [144, 145]. We found the opposite association, as those with higher subjective SES had a higher DMFT index (Paper I). We cannot rule out the possibility that our results might be biased compared to other studies that used education, occupation, or income as more objective indicators of SES. Nonetheless, a panel study that followed Russian adults from 1994 to 2013 showed little consistency between SES, as defined with objective indicators, and self-assessed health status [146]. The authors suggested that subjective SES may be more related to self-perceived health. One possible explanation for our findings may be that students with higher SES tend to adapt more to a Westernised lifestyle, with frequent consumption of foods and beverages containing added sugar. Moreover, these students may seek dental treatment more often, as they may have less DA and concerns about cost. Indeed, according to the findings from Paper II, a higher SES was associated with a lower DA in medical students (although the association was statistically significant only in the univariable analysis). Moreover, in medical students, mother's education was associated with DA – students whose mothers had a lower level of education had higher DAS scores. Although we did not find any comparable results from other studies of medical and dental students, one may assume that more educated parents, characterised by high SES, maintain a positive attitude toward dentists and dental treatment indirectly, through their own experience [31]. In contrast, in our dental students, whose mothers were more educated compared to our medical students, we did not observe any differences in DA according to level of mother's education. It also cannot be ruled out

that dental students base their attitudes on their own knowledge and experience, and less on any transferred scepticism.

Our study also showed that students who lived in rural areas during childhood had higher odds of reporting low OHRQoL compared to those who lived in urban areas (Paper III). Geographical remoteness, socioeconomic deprivation, and limited access to OH services have been discussed by other researchers to explain these differences [147]. Indeed, the European North-West of Russia has a low population density: it covers approximately 1.5 million km^2 but has a population of only 4.6 million (78.9% urban in 2016) [99]. In addition, the inhabitant-to-dentist ratio in North-West Russia is high; much higher, for example, than in the neighbouring Nordic countries (2294 inhabitants per dentist in North-West Russia vs. 1262 in Norway and 1101 in Sweden) [148]. The corresponding figure in rural areas of North-West Russia is even higher (approximately 3700 inhabitants per dentist in the Arkhangelsk Region) [22].

The importance of OH behaviour in maintaining good OH and dental health is well established. In our study, 80.8% of the medical and dental students reported brushing their teeth twice a day or more (Paper I). This is higher than the percentage reported for the past 5-10 years in university students from 26 countries across Asia, Africa, and America (67.2%) [149]; Yemen students (38.1%) [18]; and Indian medical students (24.4%) [150]. Nevertheless, the dental health of our study participants was worse than that reported in the aforementioned studies. Our medical students had poorer OH behaviour in terms of regularity of dental visits, frequency of tooth-brushing, skipping tooth-brushing, and using toothpaste with fluoride than their dental counterparts (Paper II). Although dental students had less DT than medical students (Paper II), we found no differences in the DMFT index between faculties (Papers I and II). Over-reporting of good dental behaviour by the participants, especially by the dental students, given their educational background, cannot be excluded. Indeed, 34% of the students reported skipping tooth-brushing, which was a

significant determinant of higher DMFT index (Paper I). In Paper II, less frequent tooth-brushing in dental students was associated with a higher DAS score, which was also reported in a previous study of undergraduate students [55]. In agreement with prior studies [36], our study did not support the hypothesis that students who avoid dental visits develop good OH habits on their own.

Our finding that students who visit a dentist regularly have a higher DMFT index (Paper I) is in agreement with previous Chinese [8] and Australian [14] studies. More than 90% of DMFT in our study were FT, which may suggest that dental services in Russia are focused on treatment, not on the prevention of dental caries. Moreover, in line with previous studies [58, 61], our study showed that irregular dental visits is a significant predictor of higher DA (Paper II).

5.2.5. Associations between oral health and dental anxiety

Poor self-assessed OH was significantly associated with higher DAS scores in medical students in both univariable and multivariable analyses. We also found a similar association in the univariable analysis for dental students, but after adjustment for other factors these differences were no longer significant (Paper II). Poor self-assessed OH may reflect dental problems students have, which in turn may result in DA. This corresponds to findings from other studies [32, 34]. Moreover, having experienced pain in mouth was an independent significant factor associated with higher DA in dental students. When looking at clinically-assessed OH, a higher number of DT in dental students and MT in medical and dental students was associated with a higher DAS score; but after adjustment, only MT remained as a significant predictor of DAS score in the multivariable model in dental students. Although causality in the present study cannot be established, one may assume that OH problems led to toothache and subsequent, painful tooth extractions. Our sample is first and foremost characterised by high FT values, but we did not find any differences in

the DAS score by the number of FT in medical or dental students. DA in our study showed a better association with components of the DMFT index (in our case, MT due to dental caries) than with gingivitis. GI in medical students was significantly associated with DA in the univariable analysis but became insignificant after adjustment. Gum inflammation in young adults is usually accompanied by gum bleeding only and is unlikely to result in pain. In contrast, extraction of teeth due to dental caries when dental infection results in a pulp inflammation and destruction of periapical tissues is more likely to be associated with pain than gum problems or even restorative treatment (FT) that may lead to DA.

5.2.6. Associations between oral health and oral health-related quality of life

We found that poor self-reported OH characteristics had the strongest association with low OHRQoL. This was expected and is in line with results from other studies [74, 76, 78, 79]. One obvious explanation is that the concept of OHRQoL is based on outcome measures from the patients' perspective rather than from a dental professional's viewpoint [64-66]. Indeed, dissatisfaction with mouth and teeth and poor self-assessed dental aesthetic may best reflect the OHIP-14 dimensions of psychical pain and psychological discomfort, which were the biggest drivers of low OHRQoL in our study. Physical pain is often considered easy to remember [78]. Psychological discomfort may result from poor dental aesthetic and dissatisfaction with mouth and teeth; a Malaysian study showed that psychological discomfort had the highest reported impact on OHRQoL in young adults with malocclusion [73]. Moreover, in our study a higher DMFT index was also associated with low OHRQoL. In contrast, a Swedish study did not find any differences in OHRQoL between young adults at high risk (DMFT index >8) and low risk (DMFT index=0) of dental caries [75]; nor were differences in DMFT index found in young adults in China [76]. Nevertheless, Japanese university students with a higher DMFT index had lower OHRQoL [74]. In the current study, the mean DMFT index was 7.5 (Paper III), while in

China and in Japan the corresponding values were 1.4 [76] and 2.0 [74], respectively. At present, the mechanisms of the relationship between dental caries experience and OHRQoL are unclear [74]. Given that physical pain was the OHIP-14 dimension most frequently reported, one may assume that the dental caries experience in our medical and dental students was likely associated with pain in mouth. Indeed, associations between DMFT index and experienced pain in mouth were found in the present study (Table 6).

Chapter 6. Conclusions

- A high prevalence of dental caries (96.0%) and high DMFT index (7.58), with FT accounting for 90.2% of dental caries experience, were observed among Russian medical and dental undergraduate students aged 18-25 years in North-West Russia.

- Older age, female sex, higher SES, regular dental visits, and skipping tooth-brushing were significant determinants of dental caries experience.

- Prevalence of high DA was lower in dental than in medical students (2.2% vs. 13.7%).

- DAS score in medical students was positively associated with sex (females), lower mother's education, and poor self-assessed OH. In dental students, being female, irregular dental visits, infrequent tooth-brushing, experienced pain in the mouth, and a higher number of MT were found to be significant, independent factors associated with higher DA.

- More than half of the students (53.6%) reported low OHRQoL. Physical pain and psychological discomfort were the most frequently reported OHIP-14 dimensions that impacted OHRQoL.

- Poor self-reported OH characteristics (poor self-assessed dental aesthetic and dissatisfaction with mouth and teeth) were the strongest factors associated with low OHRQoL. Socio-demographic factors (rural place of childhood residence and female sex) and clinically-assessed OH (high DMFT index) were also found to be significant predictors of low OHRQoL in medical and dental students of the NSMU. Socioeconomic factors (subjective SES, mother's education) and OH behaviour were insignificant variables in relation to OHRQoL.

Chapter 7. Final remarks and future perspectives

When assessing OH in Russian young adults, we included only medical and dental students from the NSMU. Therefore, to validate our results, a representative sample drawn from the general young adult population is needed. Moreover, to better understand the high dental caries experience in our study population, further studies that include information on the threshold for dental caries treatment among Russian dentists may be warranted.

Motivation to maintain good OH behaviour among students should be investigated. Indeed, more than 80% of our study participants reported brushing their teeth twice a day or more; however, 34% of students reported skipping tooth-brushing once a week, every day, or almost every day. Moreover, consumption of sugars, including soft drinks, needs to be studied in Russian young adults. In addition, the association between subjective SES and objective indicators of SES (education, occupation, income) should be investigated in Russia to better understand the socioeconomic inequalities in OH among Russian young adults.

Taking into account the substantially lower level of DA in dental students than medical students and the factors associated with DA in these two student groups, public health measures should focus on promoting dental literacy, increasing knowledge on the prevention of dental diseases, and motivating good OH habits in young adults in North-West Russia. The fact that more than 90% of DMFT in our study were FT may suggest that dental services in Russia are focused on treatment, not on the prevention of dental caries. Moreover, dental caries experience was associated with experienced pain in mouth, which affected OHRQoL. Therefore, public health measures should focus on the development of preventive strategies to improve OH and OHRQoL in Russian young adults. Finally, qualitative research should be developed to understand how Russian young adults describe their experience of OH, satisfaction with mouth and teeth, OHRQoL, and what they expect from good OH.

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Appendix A

Invitation letter and informed consent form (English and Russian

versions)

Request for participation in the research project
«Oral health and occupational stress in undergraduate students»

Information about the study

Background and purpose
This is a request for you to participate in a study that intends to evaluate oral health, risk factors associated with oral health, and occupational risk factors in medical and dental undergraduate students of the Northern State Medical University (NSMU), Arkhangelsk. So far, no studies have been conducted to assess determinants of oral health in young adults in North-West Russia. In addition, the present study will allow us to understand better the different aspects of stress among undergraduate students.

Criteria for participation
All students who attend the current lecture are invited to participate in Stage 1 of the study.
The following students will be invited to participate in Stage 2 of the study:
- ✓ undergraduate Russian medical (from the departments of general medicine and paediartic medicine) and dental students of NSMU from the first to the sixth year of education;
- ✓ students aged from 18 to 25 years;
- ✓ students who gave their phone numbers so they could be contacted to appoint date/time for a free clinical dental examination;
- ✓ students with oral and written informed consent to participate in the study;
- ✓ students without fixed orthodontic bands;
- ✓ not pregnant women;
- ✓ students without complaints on any systemic chronic /acute diseases.

What does the study entail?
The study will be performed in two stages. Today is Stage 1. All students who attend the lecture will be asked to fill in a self-administered structured questionnaire (Q1) for assessment of socio-demographic and socioeconomic factors, self-reported oral health outcomes, and oral health behaviour, attitudes and knowledge. Dental students will also be asked to answer on questions concerning sources of stress. At Stage 2, all dental students and a randomly selected subsample among the medical students from Stage 1 will be invited for the clinical dental examination. Presence of dental diseases, dental caries status, oral hygiene, and gum status will be registered. In Stage 2, the participant will also be invited to fill in a questionnaire (Q2) for assessment of general background information, life style variables, socio-economic status, and stress levels and coping strategies. The first and the second stage of the study will last approximately 15-20 minutes and approximately 40-45 minutes, respectively.

Potential advantages and disadvantages
Clinical dental examinations will be executed free of costs. All participants will receive the results of their dental health check immediately. Oral hygiene instructions will be given individually to all Stage 2 participants. Please note that the examination does not include any treatment for the participants. Students in need of dental treatment will be referred to the dental health care. All dental instruments for the clinical examination will be sterilised. The clinical dental examination will not include any pain or inconvenience. There are no known potential adverse events.
At the end of the data collection period (approximately May 2016), among those students who filled in Q1 and gave their phone number, a grant (NOK 2500) will be raffled off. In addition, a grant (NOK 2500) will be raffled off among those students who actually took part in the clinical examination and filled in questionnaire 2. The winners will be determined by a random selection through a computer program.

What will happen to the information collected about you?
Data registered about you will only be used in accordance with the purpose of the study as described above. The received information will be processed anonymous, without any names. We ask you today to give your phone number, so we can contact you and give you the date/time for Stage 2 and inform you if you win the grant. We will not give the information you share with us further to other organisations or persons. It will not be possible to identify you in the results of the study when these are published.

Voluntary participation
Participation in this study is voluntary. You can withdraw your consent to participate at any time and without stating any particular reason. This will not have any consequences for your further training. If you wish to participate, sign the declaration of consent on this page. Even if you agree to participate at this time, you may later on withdraw your consent. For further information, we invite you to contact Sergei Drachev (researcher, dentist) by phone +78182285785.

Right to access and right to delete your data
If you agree to participate in the study, you are entitled to have access to what information is registered about you. You are further entitled to correct any mistakes in the information we have registered. If you withdraw from the study, you are entitled to demand that the collected data are deleted, unless the data have already been incorporated in analyses or used in scientific publications.

Schedule – what happens and when does it happen?
Stage 1 of the study will be conducted today (in November and December 2015). The clinical dental examination will be executed at the Dental Clinic of NSMU from February to May 2016. One researcher (Sergei Drachev) will perform all dental examinations. An assistant will fill in the details into a clinical sheet. The researcher will be carefully calibrated on examination style and diagnostic thresholds at the Dental Clinic of UiT The Arctic University of Norway, Tromsø, Norway in January 2016.

Funding and the role of the Department of Community Medicine, UiT The Arctic University of Norway, Tromsø, Norway.
The study is funded by a research grant from the Department of Community Medicine, UiT The Arctic University of Norway, Tromsø. The results from this study will be reported at scientific conferences, published in a Doctoral Thesis and in Master Theses at UiT The Arctic University of Norway and in international research journals.

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Consent for participation in the study

I have received the information and I am willing to participate in the study

«Oral health and occupational stress in undergraduate students»

(Signed by you - the project participant, date)

Запрос на участие в исследовательском проекте
«Стоматологическое здоровье и профессиональный стресс у студентов»

Информация об исследовании

Предпосылки и цель исследования
Мы хотели бы пригласить Вас принять участие в исследовании, целью которого является оценка стоматологического здоровья и факторов, связанных с ним, а также изучение факторов риска профессионального стресса у студентов-медиков и студентов-стоматологов, обучающихся в Северном государственном медицинском университете (г. Архангельск). До настоящего времени исследований, направленных на оценку детерминант стоматологического здоровья у молодых людей на Северо-Западе России, не выполнялось. Кроме того, данное исследование позволит лучше понять различные аспекты стресса у студентов.

Кто может принять участие в исследовании?
Все студенты, которые присутствуют сегодня на лекции, могут участвовать в первой стадии исследования. Следующие студенты будут приглашены для второй стадии исследования:
- ✓ русские студенты лечебного, педиатрического и стоматологического факультетов СГМУ, с первого по шестой курс обучения;
- ✓ студенты в возрасте 18-25 лет;
- ✓ студенты, которые предоставили свой номер телефона для возможности связаться с ними и назначить дату и время для бесплатного клинического стоматологического обследования;
- ✓ студенты, согласившиеся участвовать в исследовании и подписавшие информированное согласие;
- ✓ студенты без брекетов на зубах;
- ✓ небеременные женщины;
- ✓ студенты без жалоб на системные хронические/острые заболевания.

Что включает в себя данное исследование?
Исследование будет выполнено в 2 стадии. Сегодня проводится 1-ая стадия. Всем студентам, которые присутствуют сегодня на лекции, будет предложено заполнить анкету для самооценки социально-демографических и социально-экономических факторов; стоматологического здоровья; стоматологических привычек, установок и знаний. Студентам-стоматологам будет предложено также ответить на вопросы относительно источников стресса. На 2-ой стадии, все участвующие в исследовании студенты-стоматологи и случайно выбранные студенты лечебного и педиатрического факультета из числа тех, кто принял участие в первой стадии исследования, будут приглашены на клиническое стоматологическое обследование. В ходе обследования будут определяться наличие стоматологических заболеваний; кариес; гигиена полости рта; состояние десен. Участнику будет также предложено заполнить анкету с общими вопросами относительно своего здоровья и образа жизни, социально-экономического статуса, уровня стресса и стратегий по его преодолению. Первая стадия исследования займет у Вас ~15 минут, вторая- ~40-45 минут.

Потенциальные преимущества и недостатки участия в исследовании
Клиническое стоматологическое обследование будет выполнено бесплатно. Результаты исследования будут сообщены участнику сразу же. Все участники второй стадии исследования получат советы по гигиене полости в индивидуальном порядке. Исследование не включает в себя проведения лечения. Студенты, которые нуждаются в лечении, будут направлены к соответствующему специалисту. Все стоматологические инструменты будут стерильные. Данное обследование не будет сопровождаться какой-либо болью или неудобством для его участника. Каких-либо нежелательных (побочных) эффектов от стоматологического обследования нет.
В конце периода сбора данных (предположительно, май 2016 года) среди тех студентов, кто заполнил первую анкету и оставил свой номер телефона, будет разыгран грант (2500 норвежских крон). Аналогичный грант будет разыгран и среди тех участников, кто придет на клиническое

обследование и заполнит вторую часть опросника. Победители будут определены путем случайного отбора с помощью компьютерной программы.

Что случится с информацией, которая будет получена от Вас?
Полученная информация будет использована только в соответствии с обозначенными целями исследования, описанными выше. Информация будет обрабатываться в анонимном виде, без имен. Сегодня мы попросим Вас оставить свой мобильный телефон для того, чтобы мы смогли связаться с Вами и определить для Вас дату и время второй стадии исследования, а также информировать Вас в случае победы в розыгрыше. Предоставленная информация не будет передаваться другим лицам (организациям). Будет невозможно определить информацию, предоставленную именно Вами, в результатах исследования, когда они будут опубликованы.

Добровольное участие
Участие в исследовании является добровольным. Вы можете отказаться от участия в любое время без особых на то причин. Это не будет иметь каких-то последствий для Вашего обучения. Если Вы согласны участвовать, подпишите Согласие на участие. Даже если Вы согласитесь участвовать сейчас, Вы можете отказаться позднее. Для более подробной информации, Вы можете связаться с исследователем (Драчев Сергей Николаевич, исследователь, стоматолог) по телефону: +78182285785

Право получить доступ и удалить данные
Если Вы согласились участвовать в исследовании, значит, Вы имеете право на доступ к той информации, которая касается лично Вас. В дальнейшем Вы можете провести коррекцию той информации, которая была предоставлена. Если Вы отказываетесь от исследования впоследствии, Вы имеете право потребовать, чтобы вся полученная от Вас информация была удалена. Это возможно до тех пор, пока информация не будет включена в анализ или использована в научных публикациях.

График исследования
Первая стадия исследования будет проведена сегодня (в ноябре и декабре 2015 года). Клиническое стоматологическое обследование будет проводиться в стоматологической клинике СГМУ с февраля по май 2016. Все обследования будут выполнены одним исследователем (Драчевым Сергеем). Ассистент будет заносить информацию в карту стоматологического обследования. До начала исследования исследователь будет откалиброван на проведение клинического стоматологического обследования в стоматологической клинике Арктического Университета Норвегии, г. Тромсе, Норвегия.

Финансирование и результаты проекта
Исследование поддерживается научно-исследовательским грантом Арктического Университета Норвегии, г. Тромсе, Норвегия. Результаты исследования будут доложены на научно-практических конференциях, опубликованы в докторской и магистерских диссертациях в Университете Тромсе и международных журналах.

---✂-✂-✂---

Согласие на участие в исследовании

Я получил информацию об исследовании «Стоматологическое здоровье и

профессиональный стресс у студентов» и желаю в нем участвовать

_____

(Подписывается Вами - участником проекта, дата)

Appendix B

Stage 1 questionnaire (English and Russian versions)

Date_____

QUESTIONNAIRE 1

"Oral health and occupational stress in undergraduate students"

Give only one answer to each question if no other information is given

Your phone number:

Section A
Personal background information

1. Sex

1 ☐ male
2 ☐ female

2. Year of birth?

3. Year of undergraduate education?

1 ☐ 1st year
2 ☐ 2nd year
3 ☐ 3rd year
4 ☐ 4th year
5 ☐ 5th year
6 ☐ 6th year

4. In which topic/direction are your studies?

1 ☐ General medicine
2 ☐ Dentistry
3 ☐ Paediatric medicine

5. Your education at NSMU is:

1 ☐ free
2 ☐ fee-based

6. Do you receive scholarship/funds to support your studies at NSMU?

1 ☐ yes
2 ☐ no

7. What is your marital status?

1 ☐ single
2 ☐ married
3 ☐ living with a partner
4 ☐ other, please specify

8. What is your nationality?

1 ☐ Russian
2 ☐ other, please specify

9. Where did you live during childhood and adolescence?

1 ☐ urban area
2 ☐ rural area

10. Where did you finish school?

1 ☐ Arkhangelsk City
2 ☐ Arkhangelsk Region
3 ☐ other, please specify:

11. Where do you stay during your student years (this year)?

1 ☐ in a hostel
2 ☐ in a flat/house without parents
3 ☐ in a flat/house with parents

12. Do you have additional paid work during your student years (this year)?

1 ☐ yes
2 ☐ no
3 ☐ difficult to answer

13. How many hours do you watch TV on a daily basis?

1 ☐ less 0.5 hour
2 ☐ 0.5-1 hour
3 ☐ 1-2 hours
4 ☐ 2-3 hours
5 ☐ more than 3 hours

14. How many hours do you use internet on a daily basis?

1 ☐ less 0.5 hour
2 ☐ 0.5-1 hour
3 ☐ 1-2 hours
4 ☐ 2-3 hours
5 ☐ more than 3 hours

Section B
Self-reported oral health

15. Are you presently in need for any dental treatment? (A dentist told you)

1 ☐ yes
2 ☐ no
3 ☐ difficult to answer

16. Are you presently in need for any dental treatment? (Your personal opinion)

1 ☐ yes
2 ☐ no
3 ☐ difficult to answer

17. Have you ever experienced pain in the mouth?

1 ☐ never
2 ☐ rarely
3 ☐ sometimes
4 ☐ often
5 ☐ always
6 ☐ difficult to answer

18. Have you ever experienced dental pain?

1 ☐ never
2 ☐ rarely
3 ☐ sometimes
4 ☐ often
5 ☐ always
6 ☐ difficult to answer

19. Have you ever noticed gum bleeding during tooth brushing?

1 ☐ never
2 ☐ rarely
3 ☐ sometimes
4 ☐ often
5 ☐ always
6 ☐ difficult to answer

20. Have you ever had your teeth restored?

1 ☐ yes
2 ☐ no
3 ☐ difficult to answer

21. Have you ever been informed, that you have periodontal gum disease?

1 ☐ yes
2 ☐ no
3 ☐ difficult to answer

22. If you have extracted teeth, what was the main reason for the extraction(s)? (Give more answers, if several apply)

1 ☐ I have never extracted teeth
2 ☐ periodontal disease
3 ☐ pain
4 ☐ trauma
5 ☐ orthodontic reasons
6 ☐ dental caries
7 ☐ difficult to answer

23. In whole, would you say that your oral health is?

1 ☐ excellent
2 ☐ very good
3 ☐ good
4 ☐ fair
5 ☐ poor
6 ☐ difficult to answer

24. How do you evaluate your dental aesthetic?

1 ☐ excellent
2 ☐ very good
3 ☐ good
4 ☐ fair
5 ☐ poor
6 ☐ difficult to answer

25. Are you satisfied with the state of your mouth and teeth?

1 ☐ yes
2 ☐ no
3 ☐ difficult to answer

Section C
Oral health behaviours, attitudes and knowledge

26. How often do you see a dentist?

1 ☐ regularly, at least once every 6 mth
2 ☐ regularly, at least once a year
3 ☐ occasionally
4 ☐ no visits in the last 3 years
5 ☐ difficult to answer

27. Why did you visit the dentist last time you saw him/her?

1 ☐ it was a regular check-up
2 ☐ because of pain
3 ☐ other reason (please specify)

[ ]

28. Is it difficult for you to get a dentist appointment if you need it?

1 ☐ no ⟶ -go to Q30
2 ☐ possibly ⎤ -go to Q29
3 ☐ yes ⎦

29. If you have difficulties with getting a dental appointment, what is the most important reason?

1 ☐ economic reason (cost)
2 ☐ no time
3 ☐ waiting list
4 ☐ fear of dental treatment
5 ☐ hope the problem disappear
6 ☐ other reason (please specify)

[ ]

30. How often do you brush your teeth?

1 ☐ never
2 ☐ less than once a week
3 ☐ once every few days
4 ☐ once a day
5 ☐ twice a day
6 ☐ more than twice a day

31. Do you use any tools to clean between your teeth?

1 ☐ no ——————→ -go to Q33
2 ☐ yes - tooth pick
3 ☐ yes - dental floss ⎬ -go to Q32

32. How often do you use tools to clean between your teeth?

1 ☐ less than once a week
2 ☐ once every few days
3 ☐ once a day
4 ☐ twice a day
5 ☐ more than twice a day

33. What kind of toothpaste do you use?

1 ☐ with fluoride
2 ☐ without fluoride
3 ☐ difficult to answer

34. Do you sometimes skip tooth brushing for some reason?

1 ☐ never or almost never
2 ☐ every day or almost every day
3 ☐ sometimes during a week

35. Have your dental check-ups and treatment been costly for you or your family?

1 ☐ yes
2 ☐ no
3 ☐ difficult to answer

36. Is a good oral health important to you?

1 ☐ very much so
2 ☐ yes
3 ☐ to some degree
4 ☐ not very important
5 ☐ not at all
6 ☐ difficult to answer

37. Do you usually notice the teeth and the oral health hygiene of your friends, family members or colleagues?

1 ☐ very much so
2 ☐ yes
3 ☐ to some degree
4 not very important
5 not at all
6 ☐ difficult to answer

38. What aspect of dental health do you notice the most? (Give more answers, if several apply)

1 ☐ the cleanness
2 ☐ the colour
3 ☐ the smell
4 ☐ the dentition
5 ☐ the appearance as such
6 ☐ difficult to answer

39. Do you think that good teeth and good oral health is an expression of... ? (Give more answers, if several apply)

1 ☐ being happy
2 ☐ high intelligence
3 ☐ cleanliness
4 ☐ good general health
5 ☐ difficult to answer

40. In case the state of your mouth and teeth is not optimum, what is the reason for this? (see Q25, p3)

1 ☐ insufficient dental hygiene habits
2 ☐ insufficient food habits
3 ☐ heritage
4 ☐ insufficient dental treatment
5 ☐ difficult to answer

42. Were your parents (or guardians) strict with you while growing up, with respect to regularly tooth brushing?

1 ☐ no, not the least
2 ☐ no
3 ☐ yes
4 ☐ yes, absolutely
5 ☐ don't remember

41. Is your knowledge about dental health and dental hygiene sufficient?

1 ☐ no, not the least
2 ☐ no
3 ☐ yes
4 ☐ yes, absolutely

43. From which authorities would you prefer to receive the additional knowledge about oral health? (Give more answers, if several apply)

1 ☐ from parents during childhood
2 ☐ from teachers in school
3 ☐ from mass media
4 ☐ from the dentist
5 ☐ from leaflets
6 ☐ difficult to answer

Section D – only applicable for dental students

Dental Environment Stress (DES)
Please indicate how stressful the following events were to you for __the past month__ by circling on a scale below

	Not stressful at all	Some what stress ful	Quite stress ful	Very stressful	Nonapplicable item
	1	2	3	4	5
44 Amount of assigned classwork	o	o	o	o	o
45 Lack of cooperation by patients in their home care	o	o	o	o	o
46 Difficulty of classwork	o	o	o	o	o
47 Responsibilities for comprehensive patient care	o	o	o	o	o
48 Competition for grades	o	o	o	o	o
49 Patients being late or not showing for their appointments	o	o	o	o	o

50 Examinations and grades	o	o	o	o	o
51 Difficulty in learning clinical procedures	o	o	o	o	o
52 Atmosphere created by clinical faculty	o	o	o	o	o
53 Relations with members of the opposite sex	o	o	o	o	o
54 Receiving criticism about work	o	o	o	o	o
55 Difficulty in learning precision manual skills required in preclinical and laboratory work	o	o	o	o	o
56 Lack of confidence to be a successful dental student	o	o	o	o	o
57 Lack of confidence in self to be a successful dentist	o	o	o	o	o
58 Lack of time for relaxation	o	o	o	o	o
59 Amount of cheating in dental school	o	o	o	o	o
60 Rules and regulations of the school	o	o	o	o	o
61 Working on patients with dirty mouths	o	o	o	o	o
62 Lack of home atmosphere in living quarters	o	o	o	o	o
63 Completing graduation requirements	o	o	o	o	o
64 Having children in the home	o	o	o	o	o
65 Marital adjustment problems	o	o	o	o	o
66 Expectations of dental school and what in reality it is like	o	o	o	o	o
67 Lack of input into the decision-making process school	o	o	o	o	o
68 Fear of failing course or year	o	o	o	o	o
69 Insecurity concerning professional future	o	o	o	o	o
70 Financial responsibilities	o	o	o	o	o
71 Lack of time to do assigned school work	o	o	o	o	o
72 Considering entering some other field of work	o	o	o	o	o
73 Forced postponement of marriage or engagement	o	o	o	o	o
74 Personal physical health	o	o	o	o	o
75 Attitudes of school toward women dental students	o	o	o	o	o
76 Necessity to postpone having children	o	o	o	o	o

	ID-number:				
77 Conflict with partner over career decision	o	o	o	o	o
78 Discrimination due to race, class status, or ethnic group	o	o	o	o	o
79 Having a dual role of wife/mother or husband/father and dental student	o	o	o	o	o
80 Inconsistency of feedback on your work between different instructors	o	o	o	o	o
81 Fear of being unable to catch up if behind	o	o	o	o	o
82 Having reduced holidays compared with other students	o	o	o	o	o
83 Moving away from home	o	o	o	o	o
84 Making friends	o	o	o	o	o

Thank you for your participation!

Дата_____

Анкета 1

«Стоматологическое здоровье и профессиональный стресс у студентов»

Отметьте, пожалуйста, только один ответ, если не указано никакой другой информации

Ваш номер телефона:

Секция А
Персональная информация

1. Ваш пол

1 ☐   мужской
2 ☐   женский

2. Год рождения?

3. Курс обучения в ВУЗе?

1 ☐   1 год
2 ☐   2 год
3 ☐   3 год
4 ☐   4 год
5 ☐   5 год
6 ☐   6 год

4. Направление Вашего обучения?

1 ☐   Лечебное дело
2 ☐   Стоматология
3 ☐   Педиатрия

5. Ваше обучение в СГМУ:

1 ☐   бесплатное
2 ☐   платное

6. Вы получаете стипендию в СГМУ?

1 ☐   да
2 ☐   нет

7. Ваше семейное положение?

1 ☐   не женат /не замужем
2 ☐   женат / замужем
3 ☐   живу с другом/подругой
4 ☐   другое (пожалуйста, уточните):

8. Ваша национальность?

1 ☐   Русский
2 ☐   другое (пожалуйста, уточните):

9. Где Вы проживали в детстве и юности?

1 ☐   город
2 ☐   сельская местность

10. Где Вы закончили школу?

1 ☐   Архангельск
2 ☐   Архангельская область
3 ☐   другое (пожалуйста, уточните):

11. Где Вы живете в студенческие годы (этот год)?

1 ☐   в общежитии
2 ☐   в квартире/доме без родителей
3 ☐   в квартире/доме с родителями

12. У Вас есть дополнительная оплачиваемая работа в период обучения в ВУЗе (в этот год)?

1 ☐ да
2 ☐ нет
3 ☐ затрудняюсь ответить

13. Количество просмотра ТВ в день в среднем

1 ☐ менее получаса
2 ☐ 0.5-1 час
3 ☐ 1-2 часа
4 ☐ 2-3 часа
5 ☐ более чем 3 часа

14. Количество пользования Интернетом в день в среднем

1 ☐ менее получаса
2 ☐ 0.5-1 час
3 ☐ 1-2 часа
4 ☐ 2-3 часа
5 ☐ более чем 3 часа

Секция В
Самооценка стоматологического здоровья

15. В настоящее время Вы нуждаетесь в стоматологическом лечении? (Так сказал стоматолог)

1 ☐ да
2 ☐ нет
3 ☐ затрудняюсь ответить

16. В настоящее время Вы нуждаетесь в стоматологическом лечении? (Ваше персональное мнение)

1 ☐ да
2 ☐ нет
3 ☐ затрудняюсь ответить

17. Вы когда-нибудь испытывали боль в полости рта?

1 ☐ никогда
2 ☐ редко
3 ☐ иногда
4 ☐ часто
5 ☐ всегда
6 ☐ затрудняюсь ответить

18. Вы когда-нибудь испытывали зубную боль?

1 ☐ никогда
2 ☐ редко
3 ☐ иногда
4 ☐ часто
5 ☐ всегда
6 ☐ затрудняюсь ответить

19. Вы когда-нибудь замечали кровоточивость десен во время чистки зубов?

1 ☐ никогда
2 ☐ редко
3 ☐ иногда
4 ☐ часто
5 ☐ всегда
6 ☐ затрудняюсь ответить

20. Вы когда-либо лечили/восстанавливали зубы?

1 ☐ да
2 ☐ нет
3 ☐ затрудняюсь ответить

21. Вас когда-либо информировали, что у Вас есть заболевания десен?

1 ☐ да
2 ☐ нет
3 ☐ затрудняюсь ответить

22. Если у Вас есть удаленный постоянный зуб(ы), какая была главная причина для удаления(ий)?(Возможны несколько вариантов ответов)

1 ☐ Я никогда не удалял(а) постоянные зубы
2 ☐ заболевания десен (подвижность постоянного зуба)
3 ☐ боль
4 ☐ травма
5 ☐ ортодонтические причины
6 ☐ кариес
7 ☐ затрудняюсь ответить

23. В целом, Ваше стоматологическое здоровье

1 ☐ отличное
2 ☐ очень хорошее
3 ☐ хорошее
4 ☐ удовлетворительное
5 ☐ плохое
6 ☐ затрудняюсь ответить

24. Как Вы оцениваете Вашу стоматологическую эстетику (внешний вид зубов, полости рта)?

1 ☐ отличная
2 ☐ очень хорошая
3 ☐ хорошая
4 ☐ удовлетворительная
5 ☐ плохая
6 ☐ затрудняюсь ответить

25. Вы удовлетворены состоянием Вашей полости рта и зубов?

1 ☐ да
2 ☐ нет
3 ☐ затрудняюсь ответить

Секция С
Стоматологические привычки, установки и знания

26. Как часто Вы посещаете стоматолога?

1 ☐ регулярно, по крайней мере, раз в 6 месяцев
2 ☐ регулярно, по крайней мере, раз в год
3 ☐ иногда, время от времени
4 ☐ не было никаких посещений в последние 3 года
5 ☐ затрудняюсь ответить

27. С какой целью Вы посещали стоматолога в последний раз?

1 ☐ это был регулярный осмотр
2 ☐ по причине боли
3 ☐ другое (пожалуйста, уточните):

☐

28. Для Вас сложно записаться к стоматологу, если Вам это требуется?

1 ☐ нет → -переходите к вопросу 30.
2 ☐ возможно
3 ☐ да   -переходите к вопросу 29.

29. Если у Вас есть сложности записаться на прием к стоматологу, то наиболее важная причина этого

1 ☐ экономическая причина (стоимость приема)
2 ☐ недостаток времени
3 ☐ очередь
4 ☐ страх стоматологического лечения
5 ☐ надежда, что проблема исчезнет
6 ☐ другое (пожалуйста, уточните):

☐

30. Как часто Вы чистите зубы?

1 ☐ никогда
2 ☐ менее 1 раза в неделю
3 ☐ раз в несколько дней
4 ☐ один раз в день
5 ☐ два раза в день
6 ☐ более чем 2 раза в день

31. Вы используете какие-либо средства для чистки между зубами?

1 ☐ нет → -переходите к вопросу 33.
2 ☐ да - зубочистка
3 ☐ да - зубная нить } -переходите к вопросу 32.

32. Как часто Вы используете средства для очищения между зубами?

1 ☐ менее чем 1 раз в неделю
2 ☐ 1 раз в несколько дней
3 ☐ 1 раз в день
4 ☐ 2 раза в день
5 ☐ более чем 2 раза в день

33. Какую зубную пасту Вы используете?

1 ☐ с фтором
2 ☐ без фтора
3 ☐ затрудняюсь ответить

34. Вы когда-нибудь пропускали чистку зубов в силу каких-либо причин?

1 ☐ никогда или почти никогда
2 ☐ каждый день или почти каждый день
3 ☐ иногда в течение недели

35. Стоматологические осмотры и лечение слишком дорогие по стоимости для Вас и Вашей семьи?

1 ☐ да
2 ☐ нет
3 ☐ затрудняюсь ответить

36. Хорошее стоматологическое здоровье важно для Вас?

1 ☐ очень важно
2 ☐ да, важно
3 ☐ в некоторой степени
4 ☐ не очень важно
5 ☐ совсем не важно
6 ☐ затрудняюсь ответить

37. Вы обычно обращаете внимание на зубы и гигиену полости рта Ваших друзей, членов семьи или коллег?

1 ☐ очень сильное внимание
2 ☐ да
3 ☐ в некоторой степени
4 ☐ это не очень важно
5 ☐ это совсем не важно
6 ☐ затрудняюсь ответить

38. Какие аспекты состояния зубов Вы отмечаете как самые важные? (Возможны несколько вариантов ответов)

1 ☐ чистота
2 ☐ цвет
3 ☐ запах
4 ☐ расположение
5 ☐ внешний вид как таковой
6 ☐ затрудняюсь ответить

39. Вы думаете, что хорошие зубы и хорошее стоматологическое здоровье - это выражение… ? (Возможны несколько вариантов ответов)

1 ☐ счастья
2 ☐ высокого интеллекта
3 ☐ чистоплотности
4 ☐ хорошего общего здоровья
5 ☐ затрудняюсь ответить

40. В случае, если состояние Вашей полости рта и зубов не оптимальное, в чем причина этого? (см. вопрос 25)
(Возможно несколько вариантов ответов)

1 ☐ недостаточные привычки в гигиене полости рта
2 ☐ недостаточные привычки в питании
3 ☐ наследственность
4 ☐ недостаточное стоматологическое лечение
5 ☐ затрудняюсь ответить

41. Ваши знания о здоровье зубов и гигиене зубов достаточны?

1 ☐ нет, совсем недостаточны
2 ☐ нет
3 ☐ да
4 ☐ да, абсолютно

42. Ваши родители (опекуны) требовали с Вас, пока Вы росли, регулярной чистки зубов?

1 ☐ нет, совсем нет
2 ☐ нет
3 ☐ да
4 ☐ да, абсолютно
5 ☐ не помню

43. Из каких источников Вы бы предпочли получать дополнительные знания о стоматологическом здоровье?
(Возможно несколько вариантов ответов)

1 ☐ в детстве от родителей
2 ☐ от учителей в школе
3 ☐ из средств массовой информации
4 ☐ от стоматолога
5 ☐ из информационных листов (брошюр)
6 ☐ затрудняюсь ответить

Секция D – только для студентов стоматологического факультета
Оценка стресса

Укажите, пожалуйста, насколько стрессовыми были для Вас каждое из перечисленных событий в __прошлом месяце,__ сделав отметку на предлагаемой шкале
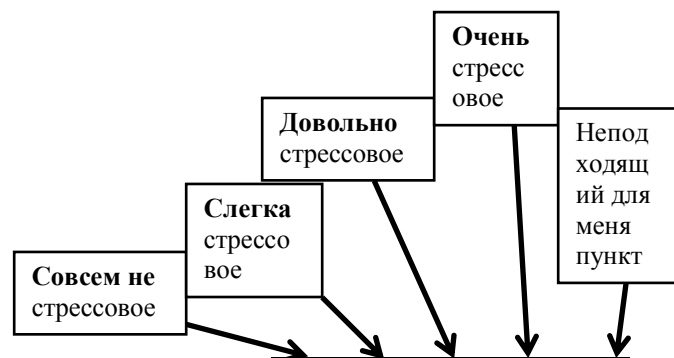
		Совсем не стрессовое	Слегка стрессовое	Довольно стрессовое	Очень стрессовое	Неподходящий для меня пункт
		1	2	3	4	5
44.	Количество заданного материала по изучаемым предметам	o	o	o	o	o
45.	Недостаточное содействие со стороны пациентов в выполнении домашнего ухода	o	o	o	o	o
46.	Трудность предметов	o	o	o	o	o
47.	Ответственность за комплексный уход за пациентом	o	o	o	o	o
48.	Конкуренция за оценки	o	o	o	o	o
49.	Опоздания пациентов или неявка на прием	o	o	o	o	o
50.	Экзамены и оценки	o	o	o	o	o
51.	Сложность освоения клинических методик (процедур)	o	o	o	o	o
52.	Атмосфера на факультете	o	o	o	o	o
53.	Отношения с противоположным полом	o	o	o	o	o
54.	Получение критики о своей работе	o	o	o	o	o
55.	Трудность в освоении точности практических навыков на предклинических и лабораторных занятиях	o	o	o	o	o
56.	Недостаток уверенности в себе быть успешным студентом-стоматологом	o	o	o	o	o
57.	Недостаток уверенности в себе быть успешным стоматологом	o	o	o	o	o
58.	Недостаток времени на отдых	o	o	o	o	o
59.	Количество нарушений (обмана, мошенничества) на	o	o	o	o	o

стоматологическом факультете

60.	*Правила и нормы стоматологического факультета*	o	o	o	o	o
61.	*Работа на пациентах, не соблюдающих гигиену полости рта*	o	o	o	o	o
62.	*Недостаток домашней атмосферы в месте проживания*	o	o	o	o	o
63.	*Выполнение требований для окончания учебного заведения*	o	o	o	o	o
64.	*Наличие детей в доме*	o	o	o	o	o
65.	*Улаживание семейных проблем*	o	o	o	o	o
66.	*Ожидания от стоматологического факультета и то, какова реальность*	o	o	o	o	o
67.	*Недостаток вклада в процесс принятия решений на стоматологическом факультете*	o	o	o	o	o
68.	*Страх не сдать предмет или не окончить учебный год*	o	o	o	o	o
69.	*Неуверенность относительно профессионального будущего*	o	o	o	o	o
70.	*Финансовые обязательства*	o	o	o	o	o
71.	*Недостаток времени сделать заданное в университете задание*	o	o	o	o	o
72.	*Рассмотрение возможности смены сферы деятельности*	o	o	o	o	o
73.	*Вынужденная отсрочка свадьбы или помолвки*	o	o	o	o	o
74.	*Собственное физическое здоровье*	o	o	o	o	o
75.	*Отношение к студентам женского пола на стоматологическом факультете*	o	o	o	o	o
76.	*Необходимость отложить заведение детей*	o	o	o	o	o
77.	*Конфликт с партнером из-за выбора карьеры*	o	o	o	o	o
78.	*Дискриминация по расе, классовому статусу, или этнической группе*	o	o	o	o	o
79.	*Наличие двойной роли жены/матери (или мужа/отца) и студентки (-та) стоматологического факультета*	o	o	o	o	o
80.	*Противоречивость ответной реакции на Вашу работу между разными наставниками (преподавателями)*	o	o	o	o	o
81.	*Страх не успеть догнать (наверстать) в случае отставания*	o	o	o	o	o
82	*Наличие более коротких каникул в сравнении с другими студентами*	o	o	o	o	o

		ID-number:				
83	*Переезд из дома*	o	o	o	o	o
84	*Установка дружеских отношений*	o	o	o	o	o

Спасибо за участие!

Appendix C

Stage 2 questionnaire (English and Russian versions)

QUESTIONNAIRE 2

"Oral health and occupational stress in undergraduate students"

Give only one answer to each question if no other information is given

Section A

1. In whole, would you say that your general health is:

1 ☐ excellent
2 ☐ very good
3 ☐ good
4 ☐ fair
5 ☐ poor
6 ☐ difficult to answer

2. In whole, would you say that your social life is:

1 ☐ excellent
2 ☐ very good
3 ☐ good
4 ☐ fair
5 ☐ poor
6 ☐ difficult to answer

3. In whole, would you say that your psychological health is:

1 ☐ excellent
2 ☐ very good
3 ☐ good
4 ☐ fair
5 ☐ poor
6 ☐ difficult to answer

4. During one regular week, how many people you actually know, do you meet or hang out with?

1 ☐ nobody
2 ☐ 1-2
3 ☐ 3-5
4 ☐ 6-10
5 ☐ 11-15
6 ☐ > 15

5. Your mother's level of education is:

1 ☐ high school (9-11 years)
2 ☐ specialized secondary
3 ☐ university
4 ☐ difficult to answer

6. Your father's level of education is:

1 ☐ high school (9-11 years)
2 ☐ specialized secondary
3 ☐ university
4 ☐ difficult to answer

7. In whole, would you say that your quality of life related to your health is:

1 ☐ excellent
2 ☐ very good
3 ☐ good
4 ☐ fair
5 ☐ poor
6 ☐ difficult to answer

8. Are you a current smoker?

1 ☐ never smoke ⟶ go to Q10
2 ☐ no, ex-smoker
3 ☐ yes, a current-smoker ⟶ go to Q9

9. When you smoked – or presently, how many cigarettes per day?

1 ☐   up to 10
2 ☐   more than 10, up to 20
3 ☐   more than 20
4 ☐   difficult to answer

10. Approximately, how many times per week do you perform light physical activity, ie without getting sweaty or breathless?

1 ☐   none
2 ☐   less than 1 time per week
3 ☐   1-2 times per week
4 ☐   3 time per week or more
5 ☐   difficult to answer

11. Approximately, how many times per week do you perform hard physical activity, ie getting sweaty and breathless?

1 ☐   none
2 ☐   less than 1 time per week
3 ☐   1-2 times per week
4 ☐   3 time per week or more
5 ☐   difficult to answer

*12. Please, indicate how often you took any alcohol (beer, wine, vodka, etc.) **in the last 12 months***

1 ☐   every day or more often
2 ☐   nearly every day
3 ☐   3-4 times per week
4 ☐   once or twice a week
5 ☐   1-3 times a month
6 ☐   a few times a year
7 ☐   never or almost never

13. In whole, would you say that you cope with the different aspects of live?

1 ☐   excellent
2 ☐   very good
3 ☐   good
4 ☐   fair
5 ☐   poor
6 ☐   difficult to answer

Section B

General Wellbeing (WHO-5 Version 2)
Please circle a number on each of the following statements to indicate how often you feel each of them has applied to you

All of the time / Most of the time / More than half of the time / Less than half of the time / Some of the time / At no time
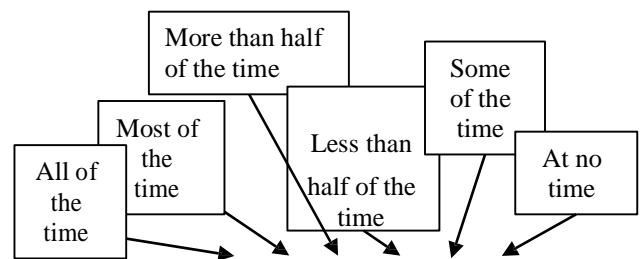
*In the **last few weeks**, how often have you:*

		5	4	3	2	1	0
14.	*I have felt cheerful and in good spirits*						
15.	*I have felt calm and relaxed*						
16.	*I have felt active and vigorous*						
17.	*I woke up feeling fresh and rested*						
18.	*My daily life has been filled with things that interested me*						

Section C
Quality of Life (Oral Health Impact Profile- OHIP-14)

Hardly ever

Occasionally

Never

Fairly often

Don't know

Very often
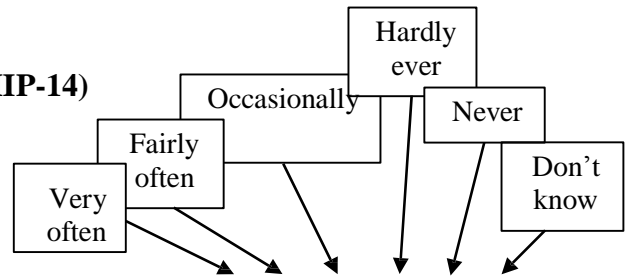
*In the **last year**, how often have you:*

	4	3	2	1	0	5
19. Have you had trouble pronouncing any words because of problems with your teeth, mouth or dentures?						
20. Have you felt that your sense of taste has worsened because of problems with your teeth, mouth or dentures?						
21. Have you had painful aching in your mouth?						
22. Have you found it uncomfortable to eat any foods because of problems with your teeth, mouth or dentures?						
23. Have you been self-conscious because of your teeth, mouth or dentures?						
24. Have you felt tense because of problems with your teeth, mouth or dentures?						
25. Has your diet been unsatisfactory because of problems with your teeth, mouth or dentures?						
26. Have you had to interrupt meals because of problems with your teeth, mouth or dentures?						
27. Have you found it difficult to relax because of problems with your teeth, mouth or dentures?						
28. Have you been a bit embarrassed because of problems with your teeth, mouth or dentures?						
29. Have you been a bit irritable with other people because of problems with your teeth, mouth or dentures?						
30. Have you had difficulty doing your usual jobs because of problems with your teeth, mouth or dentures?						
31. Have you felt that life in general was less satisfying because of problems with your teeth, mouth or dentures?						
32. Have you been unable to function because of problems with your teeth, mouth or dentures?						

Section D
Dental Anxiety Scale (Corah's Dental Questionnaire)

33. If you had to go to the dentist tomorrow for a check-up, how would you feel about it?

1 ☐ I would look forward to it as a reasonably enjoyable experience
2 ☐ I would not care one way or the other
3 ☐ I would be a little uneasy about it
4 ☐ I would be afraid that it would be unpleasant and painful
5 ☐ I would be very frightened of what the dentist would do

34. When you are waiting in the dentist's office for your turn in the chair, how do you feel?

1 ☐ Relaxed
2 ☐ A little uneasy
3 ☐ Tense
4 ☐ Anxious
5 ☐ So anxious that I sometimes break out in a sweat or almost feel physically sick

35. When you are in the dentist's chair waiting while the dentist gets the drill ready to begin working on your teeth, how do you feel?

1 ☐ Relaxed
2 ☐ A little uneasy
3 ☐ Tense
4 ☐ Anxious
5 ☐ So anxious that I sometimes break out in a sweat or almost feel physically sick

36. Imagine you are in the dentist's chair to have your teeth cleaned. While you are waiting and the dentist or hygienist is getting out the instruments, which will be used to scrape your teeth around the gums, how do you feel?

1 ☐ Relaxed
2 ☐ A little uneasy
3 ☐ Tense
4 ☐ Anxious
5 ☐ So anxious that I sometimes break out in a sweat or almost feel physically sick

Section E
MacArthur Scale

37. Subjective socioeconomic status

Think of this ladder as representing where people stand in Russian society. At the top of the ladder are the people who are the best off (they have the most money, the highest amount of schooling, and the jobs that bring the most respect), at the bottom are the people who are the worst off (they have the least money, little or no education, no jobs or jobs that no one wants or respects). The higher up you are on this ladder, the closer you are to the people at the very top; the lower you are, the closer you are to the people at the very bottom.
Now think about your family. Fill in the circle that best represents where your family would be on this ladder.
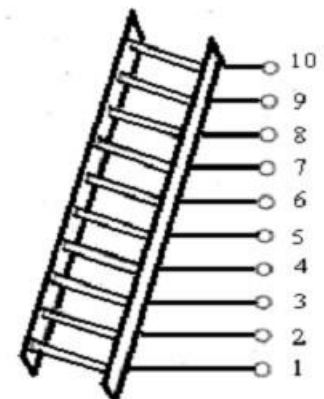
Section F

Perceived Stress Scale (PSS-10)

The questions in this scale ask you about your feelings and thoughts during THE LAST MONTH. In each case, you will be asked to indicate your response by placing an "X" representing HOW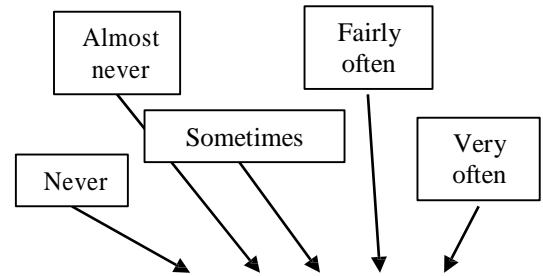 OFTEN you felt or thought a certain way. Some questions may seem identical. Nonetheless, the best approach is to answer quickly. Don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate

Never   Almost never   Sometimes   Fairly often   Very often

*In the **last month**, how often have you:*

		0	1	2	3	4
38.	*Been upset because of something that happened unexpectedly?*					
39.	*Felt that you were unable to control the important things in your life?*					
40.	*Felt nervous and "stressed"?*					
41.	*Felt confident about your ability to handle your personal problems?*					
42.	*Felt that things were going your way?*					
43.	*Found that you could not cope with all the things that you had to do?*					
44.	*Been able to control irritations in your life?*					
45.	*Felt that you were on top of things?*					
46.	*Been angered because of things that were outside of your control?*					
47.	*Felt difficulties were piling up so high that you could not overcome them?*					

Brief Approach/Avoidance Coping Questionnaire (BACQ)
How do you usually cope with problems and illness?
The questions on this page deal with how you usually act in relation to problems and disease. For each item, place a tick in the box that fits best with what you think about yourself just now. The questions are written in 'I' form and you place your tick depending on how much you agree/disagree. The purpose of the questions is to make you think about whether or not you are satisfied with the way you react to problems and illness.

Tend to disagree

Tend to agree

Yes and no

Agree completely

Disagree completely
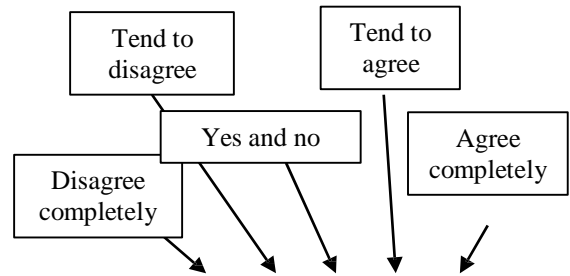
		1	2	3	4	5
48.	I say so if I am angry or sad					
49.	I like to talk with a few chosen people when things get too much for me					
50.	I make an active effort to find a solution to my problems					
51.	Physical exercise is important to me					
52.	I think something positive could come out of my complaints/problems					
53.	I firmly believe that my problems will decrease (and my situation improve)					
54.	I try to forget my problems					
55.	I put my problems behind me by concentrating on something else					
56.	I bury myself in work to keep my problems at a distance					
57.	I often find it dif. cult to do something new					
58.	I am well on the way towards feeling I have given up					
59.	I withdraw from other people when things get difficult					

60. In whole, would you say that your harmony of stress/relax is:

1 ☐ excellent
2 ☐ very good
3 ☐ good
4 ☐ fair
5 ☐ poor
6 ☐ difficult to answer

61. In whole, would you say that your grip on study-progress is:

1 ☐ excellent
2 ☐ very good
3 ☐ good
4 ☐ fair
5 ☐ poor
6 ☐ difficult to answer

*62. Please, indicate the consequences of stress you may have experienced **in the last 12 months** (Give more answers, if several apply)*

1 ☐ headache
2 ☐ sleep disturbance
3 ☐ fatigue/tiredness
4 ☐ eye strain
5 ☐ back pain
6 ☐ abdominal disturbance
7 ☐ oral ulcers
8 ☐ mood alteration
9 ☐ affect performance
10 ☐ other consequences

*63. Please, indicate the most used methods of stress reduction you may have used **in the last 12 months** (Give more answers, if several apply)*

1 ☐ read magazines or books
2 ☐ praying/spiritual activity
3 ☐ physical activity
4 ☐ meditation
5 ☐ listening to music/playing a musical instrument
6 ☐ shopping/window shopping
7 ☐ watching movies at home or at the cinema
8 ☐ smoking cigarettes
9 ☐ drinking alcohol
10 ☐ sleeping
11 ☐ spouse/girlfriend/boyfriend
12 ☐ friends
13 ☐ family
14 ☐ lecturers/mentors/academic advisors
15 ☐ professional help: doctor, psychiatrist, counselor
16 ☐ other

Thank you for your participation!

7

Дата_____

Анкета 2

«Стоматологическое здоровье и профессиональный стресс у студентов»

Отметьте, пожалуйста, только один ответ, если не указано никакой другой информации

Секция А

1. В целом, Вы бы могли сказать, что Ваше общее здоровье:

1 ☐ отличное
2 ☐ очень хорошее
3 ☐ хорошее
4 ☐ удовлетворительное
5 ☐ плохое
6 ☐ затрудняюсь ответить

2. В целом, Вы бы могли сказать, что Ваша социальная жизнь:

1 ☐ отличная
2 ☐ очень хорошая
3 ☐ хорошая
4 ☐ удовлетворительная
5 ☐ плохая
6 ☐ затрудняюсь ответить

3. В целом, Вы бы могли сказать, что Ваше психологическое здоровье:

1 ☐ отличное
2 ☐ очень хорошее
3 ☐ хорошее
4 ☐ удовлетворительное
5 ☐ плохое
6 ☐ затрудняюсь ответить

4. В течение одной обычной недели, сколько людей, которые Вам знакомы, Вы встречаете и общаетесь с ними?

1 ☐ никого
2 ☐ 1-2
3 ☐ 3-5
4 ☐ 6-10
5 ☐ 11-15
6 ☐ > 15

5. Образование Вашей матери:

1 ☐ средняя школа (9-11 классов)
2 ☐ среднее специальное (медицинский или педагогический колледж, техникум и др.)
3 ☐ университет
4 ☐ затрудняюсь ответить

6. Образование Вашего отца:

1 ☐ средняя школа (9-11 классов)
2 ☐ среднее специальное (медицинский или педагогический колледж, техникум и др.)
3 ☐ университет
4 ☐ затрудняюсь ответить

7. В целом, Вы бы могли сказать, что качество Вашей жизни, связанное с Вашим здоровьем:

1 ☐ отличное
2 ☐ очень хорошее
3 ☐ хорошее
4 ☐ удовлетворительное
5 ☐ плохое
6 ☐ затрудняюсь ответить

8. Вы курите?

1 ☐ никогда не курил → -переходите к вопросу 10
2 ☐ нет, курил раньше ⎫
3 ☐ да   ⎬ -переходите к вопросу 9

9. Когда Вы курили (или сейчас) - сколько сигарет Вы выкуривали(-ите) в день?

1 ☐ до 10
2 ☐ 10-20
3 ☐ более 20
4 ☐ затрудняюсь ответить

10. Примерно, сколько раз в неделю Вы выполняете легкую физическую нагрузку (т.е. не сопровождающуюся потливостью или напряжением дыхания)?

1 ☐ ни разу
2 ☐ менее чем 1 раз в неделю
3 ☐ 1-2 раза в неделю
4 ☐ 3 раза в неделю или более
5 ☐ затрудняюсь ответить

11. Примерно, сколько раз в неделю Вы выполняете тяжелую физическую нагрузку (т.е. сопровождающуюся потливостью или напряжением дыхания)?

1 ☐ ни разу
2 ☐ менее чем 1 раз в неделю
3 ☐ 1-2 раза в неделю
4 ☐ 3 раза в неделю или более
5 ☐ затрудняюсь ответить

*12. Пожалуйста, укажите, как часто Вы употребляли любой алкоголь (пиво, вино, водка, и тд) **в последние 12 месяцев?***

1 ☐ каждый день или несколько раз в день
2 ☐ почти каждый день
3 ☐ 3-4 раза в неделю
4 ☐ 1-2 раза в неделю
5 ☐ 1-3 раза в месяц
6 ☐ несколько раз в год
7 ☐ никогда или почти никогда

13. В целом, Вы бы могли сказать, что Вы справляетесь с различными жизненными ситуациями

1 ☐ отлично
2 ☐ очень хорошо
3 ☐ хорошо
4 ☐ удовлетворительно
5 ☐ плохо
6 ☐ затрудняюсь ответить

Секция B
Оценка общего благополучия (WHO-5 Version 2)
Отметьте, пожалуйста, цифру, которая соответствует тому, как часто каждое из перечисленных утверждений характерно для Вас

*В **последние несколько недель**, как часто*

		5	4	3	2	1	0
14.	*Я чувствовал(а) себя жизнерадостным и в хорошем настроении*						
15.	*Я чувствовал(а) себя спокойным и расслабленным*						
16.	*Я чувствовал(а) себя активным и энергичным*						
17.	*Я просыпался(-лась) бодрым(ой) и отдохнувшим(ей)*						
18.	*Моя повседневная жизнь была наполнена вещами, которые меня интересовали*						

Столбцы (слева направо):
- Все время — 5
- Большая часть времени — 4
- Более чем половина времени — 3
- Меньше половины времени — 2
- Иногда — 1
- Никогда — 0
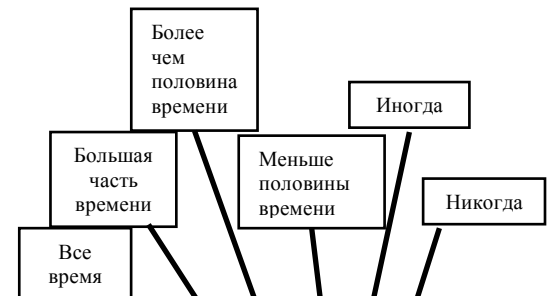
Секция С

Стоматологическое качество жизни   (Oral Health Impact Profile- OHIP-14)

Как часто Вы имели проблемы, которые указаны в вопросах,
за последний год?

	очень часто (4)	достаточно часто (3)	иногда (2)	почти никогда (1)	никогда (0)	не знаю (5)
19. Испытываете ли Вы затруднения при произношении слов из-за проблем с зубами, слизистой оболочкой полости рта или протезами?						
20. Вы потеряли вкус к пище из-за проблем с зубами, слизистой оболочкой полости рта или протезами?						
21. Испытываете ли Вы болевые ощущения в полости рта?						
22. Вызывает ли у Вас затруднение прием пищи из-за проблем с зубами, слизистой оболочкой полости рта или протезами?						
23. Чувствуете ли Вы себя стесненным в общении с людьми из-за проблем с зубами, слизистой оболочкой полости рта или протезами?						
24. Испытываете ли Вы неудобства из-за проблем с зубами, слизистой оболочкой полости рта или протезами?						
25. Питаетесь ли Вы неудовлетворительно из-за проблем с зубами, слизистой оболочкой полости рта или протезами?						
26.Приходится ли Вам прерывать прием пищи из-за проблем с зубами, слизистой оболочкой полости рта или протезами?						
27.Мешают ли Вам проблемы с зубами, слизистой оболочкой полости рта или протезами отдыхать, расслабляться?						
28.Ставят ли Вас проблемы с зубами, слизистой оболочкой полости рта или протезами в неловкое положение?						
29.Приводят ли Вас проблемы с зубами, слизистой оболочкой полости рта или протезами к повышенной раздражительности при общении с людьми?						
30. Испытываете ли Вы затруднения в обычной работе из-за проблем с зубами, слизистой оболочкой полости рта или протезами?						
31. Становится ли Ваша жизнь менее интересной из-за проблем с зубами, слизистой оболочкой полости рта или протезами?						
32.Приходится ли Вам полностью «выпадать из жизни» из-за проблем с зубами, слизистой оболочкой полости рта или протезами?						

Секция D
Оценка стоматологической тревожности (Corah's Dental Questionnaire)

33. Если бы Вы должны были завтра идти к стоматологу на осмотр, какие бы чувства Вы испытывали в связи с этим?

1 ☐ Я бы с нетерпением ждал этого, как достаточно приятное событие
2 ☐ Мне было бы все равно
3 ☐ Мне было бы немного тревожно
4 ☐ Мне было бы страшно, что будет неприятно и больно
5 ☐ Я был бы очень испуган тем, что будет делать стоматолог

34. Когда Вы ждете своей очереди в стоматологическом кабинете, как Вы себя чувствуете?

1 ☐ Расслабленно
2 ☐ Немного неловко (беспокойно)
3 ☐ Напряженно
4 ☐ Тревожно
5 ☐ Так тревожно, что иногда меня бросает в пот, или я почти что чувствую себя физически нездоровым

35. Когда Вы находитесь в кресле стоматолога и ждете, пока врач приготовит бормашину, чтобы начать работать с Вашими зубами, как Вы себя чувствуете?

1 ☐ Расслабленно
2 ☐ Немного неловко (беспокойно)
3 ☐ Напряженно
4 ☐ Тревожно
5 ☐ Так тревожно, что иногда меня бросает в пот, или я почти что чувствую себя физически нездоровым

36. Представьте, что Вы находитесь в кресле у стоматолога, чтобы Вам почистили зубы. Пока Вы ожидаете, и стоматолог или гигиенист достают инструменты, которые будут использоваться, чтобы поскоблить Ваши зубы вокруг десен, как Вы себя чувствуете?

1 ☐ Расслабленно
2 ☐ Немного неловко (беспокойно)
3 ☐ Напряженно
4 ☐ Тревожно
5 ☐ Так тревожно, что иногда меня бросает в пот, или я почти что чувствую себя физически нездоровым

Секция E

37. *Субъективный социально-экономический статус (MacArthur Scale)*

Представьте, что эта лестница представляет положение людей в Российском обществе. На самой верхней ступени находятся состоятельные люди, которые имеют много денег, самое лучшее образование, самую лучшую работу. На самой нижней ступени находятся люди, живущие в нужде (с минимальным количеством денег, минимальным образованием, с наихудшей работой или отсутствием работы). Чем выше Вы находитесь на этой лестнице, тем ближе Вы к людям, кто на самом верху, и чем ниже - тем ближе к тем, кто на самой нижней ступени.
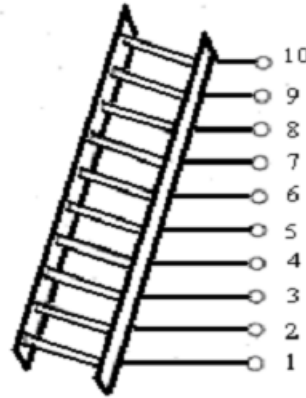
Сейчас подумайте о Вашей семье. Отметьте, пожалуйста, кружок (цифру), где бы находилась Ваша семья на этой лестнице.

Секция F

Шкала восприятия стресса (PSS-10)

Вопросы в этой шкале касаются ваших ощущений и мыслей в течение **ПОСЛЕДНЕГО МЕСЯЦА**. В каждом случае необходимо предоставить ответ, поместив "Х" в кружочке, определяющем **КАК ЧАСТО** вы чувствовали или думали определенным образом. Хотя некоторые вопросы подобны, между ними есть разница, и вы должны рассматривать каждый из них, как отдельный вопрос. Самый лучший подход - ответить сравнительно быстро. Другими словами, не пытайтесь подсчитать, сколько раз вы чувствовали себя определенным образом, а лучше укажите вариант, который кажется вам правдоподобным.

Никогда — 0
Почти никогда — 1
Иногда — 2
Достаточно часто — 3
Очень часто — 4
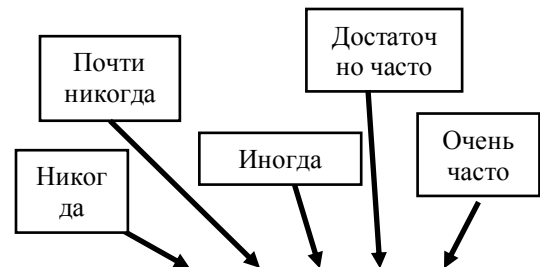
	За последний месяц как часто Вы	**0**	**1**	**2**	**3**	**4**
38.	*Были расстроены из-за чего-то, что произошло неожиданно?*					
39.	*Чувствовали, что не могли контролировать важные вещи в Вашей жизни?*					
40.	*Чувствовали себя нервным и напряженным?*					
41.	*Чувствовали уверенность в способности решать свои личные проблемы?*					

42.	*Чувствовали, что дела идут согласно Вашим планам?*					
43.	*Понимали, что не можете справиться со всеми делами, которые Вы должны были сделать?*					
44.	*Были способны контролировать раздражение?*					
45.	*Чувствовали, что у Вас все под полным контролем?*					
46.	*Злились из-за происходящих событий, которые не были под Вашим контролем?*					
47.	*Чувствовали, что трудности наваливаются на Вас так сильно, что Вы не можете их преодолеть?*					

Как Вы обычно справляетесь с проблемами или болезнью?

Вопросы в этом разделе выясняют, как Вы обычно действуете в отношении проблем и болезней. Для каждого утверждения поставьте в поле галочку, которая лучше всего отразит степень Вашего согласия с данным утверждением на данный момент времени. Цель вопросов - заставить Вас задуматься о том, удовлетворены Вы или нет тем, как Вы реагируете на проблемы и болезни.

Полностью не согласен — Скорее не согласен — Да и нет — Скорее согласен — Полностью согласен
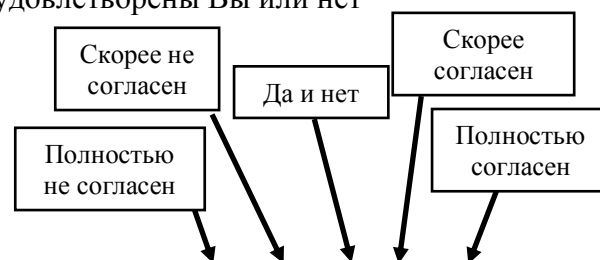
		1	2	3	4	5
48.	*Я говорю, если я злюсь или мне грустно*					
49.	*Мне нравится говорить с несколькими избранными людьми, когда дел становится слишком много для меня*					
50.	*Я прилагаю активные усилия, чтобы найти решение моих проблем*					
51.	*Физические упражнения важны для меня*					
52.	*Я думаю, что что-то положительное могло бы выйти из моих жалоб / проблем*					
53.	*Я твердо верю, что мои проблемы будут уменьшаться (и моя ситуация улучшится)*					
54.	*Я пытаюсь забыть мои проблемы*					
55.	*Я отодвигаю свои проблемы, концентрируясь на чем-то другом*					
56.	*Я погружаюсь в работу, чтобы держать мои проблемы на расстоянии*					
57.	*Мне часто трудно сделать что-то новое*					
58.	*Я чувствую себя хорошо, осознавая, что сдался*					
59.	*Я отдаляюсь от других людей, когда обстоятельства становятся трудными*					

60. В целом, Вы могли бы сказать, что баланс стресс/отдых:

1 ☐ отличный
2 ☐ очень хороший
3 ☐ хороший
4 ☐ удовлетворительный
5 ☐ плохой
6 ☐ затрудняюсь ответить

61. В целом, Вы могли бы сказать, что Ваш контроль над обучением:

1 ☐ отличный
2 ☐ очень хороший
3 ☐ хороший
4 ☐ удовлетворительный
5 ☐ плохой
6 ☐ затрудняюсь ответить

*62. Пожалуйста, укажите последствия стресса, которые Вы, возможно, испытали в течение **последних 12 месяцев** (Возможно несколько вариантов ответа)*

1 ☐ головная боль
2 ☐ нарушение сна
3 ☐ усталость
4 ☐ переутомление глаз
5 ☐ боль в спине
6 ☐ абдоминальные нарушения (нарушения в желудочно-кишечном тракте)
7 ☐ язвы в полости рта
8 ☐ изменение настроения
9 ☐ снижение работоспособности
10 ☐ другое (пожалуйста, уточните)

☐

*63. Пожалуйста, укажите наиболее часто используемые методы снижения стресса, которые Вы, возможно, использовали **в течение последних 12 месяцев** (Возможно несколько вариантов ответа)*

1 ☐ чтение журналов или книг
2 ☐ молитва/духовная активность
3 ☐ физическая активность
4 ☐ медитация
5 ☐ прослушивание музыки/игра на музыкальных инструментах
6 ☐ шопинг/разглядывание витрин в магазине
7 ☐ просмотр фильмов дома или в кинотеатре
8 ☐ курение
9 ☐ употребление алкоголя
10 ☐ сон
11 ☐ общение с другом/подругой
12 ☐ общение с друзьями
13 ☐ общение с семьей
14 ☐ общение с преподавателями
15 ☐ профессиональная помощь: врач, психиатр, консультант
16 ☐ другое (пожалуйста, уточните)

☐

Спасибо за Ваше участие!

Appendix D

Clinical sheet for clinical dental examination

(English and Russian versions)

Date_____

CLINICAL DENTAL EXAMINATION
"Oral health and occupational stress in undergraduate students"

1. Sex

1 ☐ male
2 ☐ female

2. Year of birth

3. Year of undergraduate education?

1 ☐ 1st year
2 ☐ 2nd year
3 ☐ 3rd year
4 ☐ 4th year
5 ☐ 5th year
6 ☐ 6th year

4. Do you have any of the listed «conditions»?

1 ☐ fixed orthodontic bands
2 ☐ pregnancy
3 ☐ complaints on any systemic chronic /acute diseases

5. Total number of teeth

Total no. of teeth in upper jaw _____

Total no. of teeth in lower jaw _____

6. DMFT

Upper right								Upper left							
18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
Lower right								Lower left							

7. OHI-S (*debris+calculus*)

Debris/ calculus	*Right molars*		*Anterior*		*Left molars*	
	Buccal 16	Lingual 46	Labial 11	Labial 31	Buccal 26	Lingual 36
Upper	/		/		/	
Lower		/		/		/

8. Gingival Index (*inflammation*)

N of tooth	GI	
	B	L
44		
32		
36		
24		
12		
16		

Дата_____

Карта стоматологического обследования

« Стоматологическое здоровье и профессиональный стресс у студентов»

1. Пол

1 ☐ мужской
2 ☐ женский

2. Год рождения

☐

3. Курс обучения?

1 ☐ 1
2 ☐ 2
3 ☐ 3
4 ☐ 4
5 ☐ 5
6 ☐ 6

4. Есть ли у Вас перечисленные «состояния»?

1 ☐ несъемные ортодонтические аппараты (брекеты)
2 ☐ беременность
3 ☐ жалобы на системные хронические /или острые заболевания

5. Общее число зубов

на в.ч. _____

на н.ч _____

6. КПУ

верхние правые								верхние левые							
18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
нижние правые								нижние левые							

7. OHI-S (*зубной налет+камень*)

налет+камень	Правые моляры		Передние зубы		Левые моляры	
	щечная 16	язычная 46	губная 11	губная 31	щечная 26	язычная 36
В.Ч.	/		/		/	
Н.Ч.		/		/		/

8. ГИ-Гингивальный индекс (воспаление)

Зуб	ГИ	
	Вестибулярная сторона	Лингвальная сторона
44		
32		
36		
24		
12		
16		