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Published since 3 January 1920



Assessment of physical activity level and nutritional status of soldiers serving in the Airborne Battalion

Rules for dealing with orthodontic appliances in an orthodontic surgery and laboratory in order to prevent cross-infection

Third molar germ presence assessment in patients with an age of 10 years on orthopantomographic radiographs

Col. Adolf Malinowski (1891–1962) MD, PhD, a meritorious Polish military and forensic psychiatrist

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Original articles should be prepared according to the following structure: introduction, aim, material and methods, results, discussion, conclusions, references; case reports: introduction, case description, discussion, summary (conclusions), and references.

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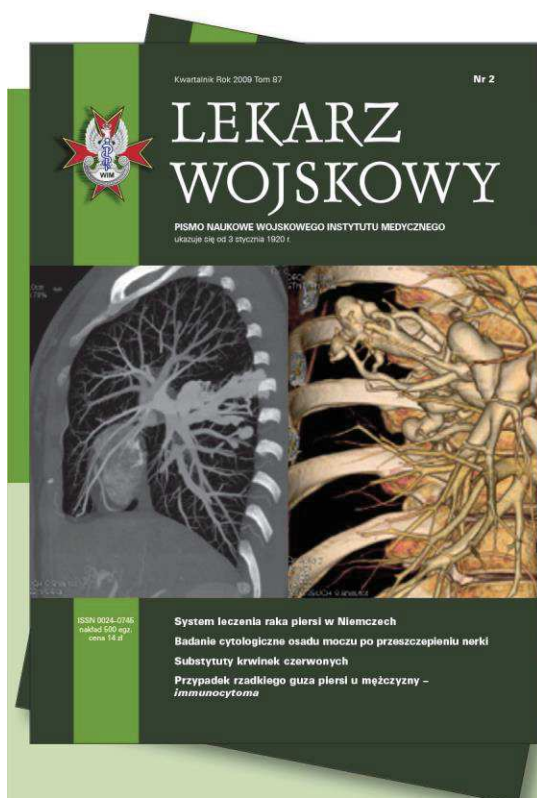
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Letter from the Editor-in-Chief



Dear Readers,

Since 14th April 2021, I have had the honour of being the Editor-in Chief of *Military Physician*, a medical journal of great importance to us, as physicians associated with military health care. It has been published for 100 years, which makes it one of the 4 oldest medical journals in Poland. *Military Physician* has presented articles written by renowned professors and most of us, military physicians, took our first steps here.

Our journal has become overshadowed by the progress of digitalisation and the activities of the journals associated with scientific societies as well as their high impact factors. However, I believe that the great potential, supported by the expertise of physicians and scientists from the Military Institute of Medicine and their broad scientific contacts, will allow *Military Physician* to restore the position it deserves among high impact journals that popularise science and current standards in medicine.

The progress of digitalisation is naturally associated with an enormous number of mobile applications. It enforces a transition of the journal from its present form to an electronic one, which we wish to introduce gradually, starting from the first issue in 2022. Simultaneously, the scientific environment has changed, bringing new forms of recording and dissemination of scientific content, used by publishers to create electronic and hybrid journals. We will be working on this in 2022.

Regarding the subjects presented in *Military Physician*, they cannot be restricted to military specialisations. We will publish articles on medicine, pharmacy, physical culture, health, medical biology, social sciences related to security, law, psychology and biomedical engineering.

Most changes, including new graphic designs, a new website and the option of submitting articles via an editor dedicated to *Military Physician*, will be introduced from the first issue in 2022, which will be the 100th volume of the journal.

In the next issue, prepared virtually entirely by the former editorial team, we will present original articles on dentistry. We will also continue the historical section. The articles are assigned DOI numbers.

From 2022, the publisher of the journal will change as well – the role will be taken over by the Military Institute of Medicine Publishing House.

With over 40 years of professional experience, I believe that we can succeed in maintaining the high position of *Military Physician* among all medical journals under these new circumstances.

A handwritten signature in blue ink, which appears to read 'B. Kalicki'.

Prof. Bolesław Kalicki MD, PhD

Assessment of physical activity level and nutritional status of soldiers serving in the Airborne Battalion

Ocena aktywności fizycznej i stanu żywienia żołnierzy służących w Batalionie Powietrznodesantowym

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Abstract Soldiers form a specific social group that is exposed to the high burdens, both physical and mental, associated with their training and service. Rational nutrition and adequate levels of physical activity play a crucial role in maintaining their good health, which means that sufficient understanding of the nutrition and physical activity of soldiers is essential in maintaining their combat ability. The aim of this work was to assess the nutritional status and physical activity of soldiers serving in the 16th Airborne Battalion in Kraków. A total of 69 soldiers participated in this assessment. The analysis of physical activity utilised the International Physical Activity Questionnaire (IPAQ), while frequency of food intake was assessed by the Frequency of Food Intake Questionnaire (FFQ). The assessment demonstrated that 85% of the soldiers had a high level of physical activity. Additional observations from the survey were: the consumption of fruits and vegetables was too low, while the consumption of low-quality processed meats, dairy products and sugar was excessive. The study concludes that the soldiers were highly physically active. In addition, education related to rational nutrition choices and the nutritional prevention of civilization metabolic diseases should be introduced among soldiers.

Keywords: food ration, physical activity, soldiers

Streszczenie Żołnierze są specyficzną grupą społeczną, która narażona jest na duże obciążenie fizyczne i psychiczne związane z ich służbą oraz treningami. Racjonalne odżywianie oraz odpowiedni poziom aktywności fizycznej odgrywają kluczową rolę w utrzymaniu dobrego stanu zdrowia, dlatego wiedza o żywieniu oraz aktywności fizycznej żołnierzy jest niezbędna do utrzymania ich zdolności bojowych. Celem tej pracy była ocena stanu odżywiania oraz aktywności fizycznej żołnierzy służących w 16. Batalionie Powietrznodesantowym w Krakowie. Badaniu poddano 69 żołnierzy. Analizę aktywności fizycznej wykonano za pomocą Międzynarodowego Kwestionariusza Aktywności Fizycznej IPAQ. Częstotliwość spożywania jedzenia oceniano za pomocą Kwestionariusza Częstotliwości Spożycia Żywności FFQ. W wyniku przeprowadzonych badań stwierdzono, że 85% żołnierzy wykazywało wysoki poziom aktywności fizycznej. Dodatkowe wyniki uzyskane w badaniu są następujące: spożycie owoców i warzyw jest zbyt małe, zaobserwowano nadmierne spożycie złej jakości przetworzonych produktów mięsnych, nabiału oraz cukru. Wnioski z przeprowadzonego badania wskazują, że aktywność fizyczna żołnierzy była bardzo duża. Ponadto stwierdza się, że należy prowadzić wśród żołnierzy edukację dotyczącą racjonalnego odżywiania oraz żywieniowej profilaktyki cywilizacyjnych chorób metabolicznych.

Słowa kluczowe: żołnierze, aktywność fizyczna, racja żywnościowa

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Introduction

Issues concerning proper nutrition are very important factors affecting the maintenance of good health and physical fitness levels among soldiers. Soldiers are exposed to high physical and mental burdens resulting from the training process and the nature of their service. Therefore, the alimentation of soldiers should be rational, i.e. it should cover their requirements for energy and for all nutrients, as well as featuring a preventive element in relation to diet-dependent civilizational diseases. To be able to meet these conditions for rational nutrition, soldiers must possess adequate knowledge about the subject [1]. The character of the service, its nature, the type of unit and training required, as well as the duties, are all factors essentially affecting the nutritional needs of each soldier. Hence, the diet and eating habits must be constantly adapted to the changing conditions of training and service. Remaining in good health and maintaining an adequate physical condition are basic requirements for the performance of professional military service. It is especially important for soldiers serving and fulfilling training tasks in special units, including the 16th Airborne Battalion in Kraków. The battalion is intended primarily to perform actions in enemy territory. The aim of the battalion's airborne activities is the liberation of troops and the disruption of enemy actions, especially in the areas to the rear, mainly by engaging the enemy's reserves and reducing their combat potential. Therefore, the training of the soldiers includes the fulfilment of many tasks, including the strictly military ones, as well as activities shaping mental resistance and physical fitness, such as parachute training, climbing, skiing, etc. [2]

Aim

The aim of this work was to evaluate the diet and level of physical activity of soldiers during professional military service in the 16th Airborne Battalion in Kraków

Material and Methods

A total of 69 soldiers underwent the assessment. All subjects provided data on consumption frequency, and 48 performed a physical activity test. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of 1/XXI/2016. The physical activity test was based on the International Physical Activity Questionnaire - IPAQ. IPAQ is a written assessment of physical activity that is made based on a description of weekly (7-day) activities [3]. The following factors are assessed: physical activity associated with work, with movement, with housework, and with physical activity during leisure time, as well as duration of passive actions. The IPAQ expresses any type

Table 1. Percentages of the soldiers in three categories of physical activity

Tabela 1. Procent badanych żołnierzy zaklasyfikowanych do jednej z trzech kategorii aktywności fizycznej

subjects	physical activity level		
	high	moderate	low
soldiers (n=41)	85.4% (35)	12.2% (5)	2.4% (1)

Table 2. Average value of total MET/min/week for intense and moderate activity and for walking (±SD)

Tabela 2. Średnia wartość całkowitego MET/min/tydzień dla intensywnej i umiarkowanej aktywności fizycznej i dla chodzenia (±odchylenie standardowe)

subjects	total intense activity	total moderate activity	total walking	total activity in MET/min/week
soldiers (n=41)	5000.98* ±4024.49	3337.74* ±2834.65	4386.18 ±3829.72	12 724.9

* There is a statistically significant difference between total intense activity and total moderate activity

of physical activity in MET (metabolic energy turnover) - minutes/week units. The MET factor value is based on individual physical effort and the duration of such physical exercise in minutes per day, and the number of days in the week in which it was performed. Weekly physical activity (PA) is a sum of the individual physical activity outcomes [4]. The time spent during each activity in the previous week was recorded; however, only effort lasting at least 10 minutes without interruption were taken into consideration. This allowed the estimation of overall physical activity expressed in MET/min/week. The statistical analysis used the R program (version 2.0-1, R Foundation for Statistics Computing, <https://cran.r-project.org>). Differences between groups were checked using the u test. Frequency of food intake was assessed by the Food Frequency Questionnaire (FFQ). Assessment of food intake frequency according to the FFQ is a valuable quality measurement tool in nutritional epidemiology. It is an easy method to apply [5] and it is 30 times cheaper than four-day permanent registering [6]. Based on the obtained data, it is possible to assess individuals having different levels of individual product consumption or characteristic patterns of consumption. Based on the FFQ, food consumption preferences were assessed for a group of soldiers over the previous 12 months. This questionnaire contained questions regarding 8 groups of food products. Products were combined in groups: sweets and snacks, dairy products and eggs, fruit, vegetables and grains, meat products and fish, cereals, fats, and beverages [7]. The respondents

Table 3. Average values of physical activity level expressed in MET units (\pm SD)**Tabela 3. Średnie wartości poziomu aktywności fizycznej wyrażone w MET (\pm odchylenie standardowe)**

subjects	activity related to work	activity related to movement	activity related to housework	activity related to recreation	total activity in MET/min/week
soldiers (n=41)	5566.90* \pm 4526.56	1629.48* \pm 1587.08	1696.77* \pm 1859.45	3831.76* \pm 3215.03	12,724.9

* There are statistically significant differences between every variable in the table, except for activities related to movement with activities related to housework, where no differences were found

had 8 categories of food intake frequency from which to choose. They were marked with numbers: never or almost never (1), once a quarter or less (2), once a month or less (3), several times a month (4), once a week (5), several times a week (6), every day (7), and several times a day (8). The researchers responsible for conducting the survey were present in the room while the participants were filling in the questionnaires. The data from the FFQ was presented as a median, assuming that the results would be given as integer values (corresponding to frequency of product consumption). For the rest of the data the average values and standard deviation were calculated.

Results

The level of physical activity by the soldiers was assessed based on survey form analysis. The results were presented in the form of tables showing the average values of MET expressed in MET/min/week units. Based on the average value of physical activity, expressed in MET-min/week units, the subjects were each assigned to one of three levels of physical activity: high, moderate and low [4].

More than 85% of the soldiers had a high level of physical activity (Table 1).

The structure of physical activity is as follows: 39.2% of the subjects had high activity, 26.2% had moderate activity, and 34.5% only walked (Table 2).

Work and recreation played a key role in the physical activity structure of the soldiers (Table 3). Intense physical activity while working occurred in 49.2% of the subjects (Table 4).

The soldiers moved around by bicycle or by walking (Table 5). For this group, walking constituted 94% of this activity.

42.6% of the subjects had very intense housework activities, but there were significant differences among this group of subjects. During leisure time the subjects undertook mainly moderate efforts (Table 7).

Table 4. Average MET values (MET/min/week) during military service (\pm SD)**Tabela 4. Średnie wartości MET (MET/min/tydzień) podczas służby wojskowej (\pm odchylenie standardowe)**

subjects	intense MET	moderate MET	MET walking	total MET
soldiers (n=41)	2739.51* \pm 2718.46	1176.59* \pm 1618.49	1650.80* \pm 1747.11	5566.90 \pm 4526.56

* There are statistically significant differences between every variable in the table, except moderate MET with MET walking, where no differences were found

Table 5. Average MET value (MET/min/week) associated with exercise (\pm SD)**Tabela 5. Średnie wartości MET (MET/min/tydzień) związane z ruchem żołnierzy (\pm odchylenie standardowe)**

subjects	MET bicycle	MET walking	total MET
soldiers (n=41)	96.59 \pm 314.61	1532.89 \pm 1562.35	1629.48 \pm 1587.08

Table 6. Average MET value (MET/min/week) associated with housework done by soldiers (\pm SD)**Tabela 6. Średnie wartości MET (MET/min/tydzień) związane z pracami domowymi żołnierzy (\pm odchylenie standardowe)**

subjects	intensive MET	moderate MET (at home)	moderate MET (around home)	total MET
soldiers (n=41)	722.38 \pm 1191.94	484.88 \pm 611.96	489.51 \pm 596.51	1696.77 \pm 1859.45

The results presented in Table 8 show a short time spent in a sitting position at work, which confirms the high levels of physical activity of the soldiers.

Based on the analysis of the results obtained in studies where the FFQ was applied, the consumption frequency of products from 8 food groups was assessed. The frequency of food intake is presented as median values (Table 9).

Table 7. Average MET value (MET/min/week) associated with physical effort by soldiers in their spare time (\pm SD)
Tabela 7. Średnie wartości MET (MET/min/tydzień) związane z wysiłkiem fizycznym żołnierzy w czasie wolnym (\pm odchylenie standardowe)

subjects	intense MET	moderate MET	MET walking	total MET
soldiers (n=41)	1202.49 \pm 1694.90	2261.46* \pm 2104.40	367.80* \pm 472.99	3831.76 \pm 3215.03

* There is a statistically significant difference between moderate MET and MET walking

Table 8. Time spent in a sitting position at work and during leisure time by soldiers of the 16th Airborne Battalion (\pm SD)
Tabela 8. Czas spędzony w pozycji siedzącej w pracy oraz w czasie wolnym przez żołnierzy 16. Batalionu Powietrznodesantowego (\pm odchylenie standardowe)

subjects	time spent in a sitting position	
	time spent sitting at work (min.)	time spent sitting at home (min.)
soldiers (n=41)	184.39 \pm 110.75	254.63 \pm 131.30

The answers: 'never, or almost never (1)' and 'several times a day (8)' were not noticed. Game and lard had the lowest frequency of consumption, soldiers eating them once a quarter or less (2). Honey, candies, ice cream and salty snacks, flavoured cottage cheese, margarine, mayonnaise, dried fruit, fruit preserves and grain were eaten once a month or less (3). The soldiers ate chocolate candies, cookies, breakfast cereals, cream, nuts and fish several times a month (4). Natural cottage cheese, groats and oil were eaten once a week (5), while poultry meat, red meat, vegetables and fruit, butter, brown and white bread, dairy products, cheese, eggs and sugar were eaten several times a week (6). Everyday consumption (7) concerned only sausages in the group of meat products and fish. When analysing the consumption of beverages, it was shown that the group drank fruit juices once a week, vegetable juices, sweetened drinks and beer several times a month, and energy drinks as well as wine and spirits once a month or less (Table 9).

Discussion

The IPAQ tool used in this examination allowed objective assessments and comparisons between types of physical activity in different professional groups [8].

The levels of physical activity found among the soldiers was high. In comparing the MET values obtained for the

Table 9. Groups of food products analysed in this study and frequency of their consumption by the soldiers (n=69) in the last 12 months

Tabela 9. Grupy produktów żywności analizowane w tym badaniu i częstość ich konsumpcji przez żołnierzy (n=69) w ciągu ostatnich 12 miesięcy

food groups	items (median frequency)
sweets and snacks	sugar (6), honey (3), chocolate and chocolate candies (4), sweets (3), biscuits and cakes (4), ice-cream and blancmange (3), salty snacks (3)
dairy products and eggs	milk and natural milk drinks (6), sweetened milk drinks (6), cottage cheese (5), flavoured cottage cheese (3), other hard cheese (6), eggs (6)
cereal products	brown bread (6), white bread (6), coarse groats (5), small-grained groats (5), ready to eat breakfast cereals (4)
fat	oil (5), butter (6), margarine (3), cream (4), lard (2), mayonnaise (3)
fruit	all kinds of fruit (6), dried fruit (3), fruit preserves (3)
vegetables and grains	all kinds of vegetables (6), nuts (4), grains (3)
meat and fish products	sausages (7), high quality cold meat, i.e. ham (6), offal (3), beef/pork meat (6), poultry (6), game (2), lean fish (4), oily fish (4)
beverages	fruit juice (5), vegetable juice (4), energy drinks (3), sweet beverages (4), beer (4), wine and drinks (3), vodka and high-proof alcohol (3)

Frequency categories are: 1 (never or almost never), 2 (once per quarter or less), 3 (once a month or less), 4 (several times a month), 5 (once a week), 6 (several times a week), 7 (every day), 8 (several times a day)

soldiers from the special unit in this research with the results obtained by Mroziak and Stupnicki [9] during the assessment of students connected with sport, there is a significantly higher level of physical activity undertaken by the soldiers (5566 MET) compared to the students (3746). Sławecki [10], in presenting the diversity of physical activity levels among males depending on age and education, has shown that both of these factors significantly differentiate the levels of physical activity related to work and leisure time. Males aged 30-39 were the most active at work. The average value of MET/min/week for this age group was 714. Physical activity related to recreation and sport was most willingly undertaken by males aged 20-29, with an average value of 516 MET/min/week. The MET values obtained by this author were significantly lower than the values characterizing the soldiers in this study. Piątkowska [11] analysed the age as a differentiation factor of physical activity level for the Polish population. The results showed that the physical activity level of Poles was not as low as presented in numerous studies. According to the results

of her study, 33.5% of Poles had a high level of activity, 32.3% had a moderate level, and 27.9% had a low level. The average energy expenditure related to physical activity of the whole population was 2331.26 ± 2159.43 MET/min/week. Tomczak [12] obtained similar results while examining soldiers from a Special Forces unit. For efforts related to work, the weekly energy expenditure value was 5083 MET, and for efforts related to recreation it was 3540 MET. The quoted results coincide with the findings obtained in this study, and describe well the weekly physical activity of soldiers from special forces. The average MET/min/week values analysis indicated that more than 40% of the subjects' activity was military service related (Table 2), because they participate in organized physical education classes 2-4 times a week where high levels of physical activity is required. High physical activity and a balanced diet are the main ways to prevent civilizational diseases such as obesity, diabetes, motor system and circulatory system disorders [13]. Rational nutrition that ensures the body is maintained in good health and optimum work output is of particular importance in the army. The selection of suitable nutrients and their proportions is important in military service. The body must receive essential nutrients in order to ensure adequate combat capability and body work efficiency. As a result of the studies, and thanks to the FFQ, issues with nutrition were revealed. The subjects admitted that fruits and vegetables were eaten several times a week. According to the new food pyramid, fruit and vegetables should be eaten as often as possible and in large quantities, in the proportions of vegetables to Vi fruit [14]. In the study carried out by Szczepańska et al. [15], it was shown that among young people aged 13 to 18.9 years, fruit juice was drunk more often by girls than by boys. Girls drank fruit juices more than 4 times a week. The consumption of fruit and vegetable juices among the boys was very low. The soldiers in this study drank fruit juices once a week, while vegetable juices were drunk equally rarely (several times a month). Fruit and vegetable consumption in Poland is low. Research carried out in Wrocław among people aged 50 showed that the average daily intake of vegetables, not taking into account potatoes, expressed as a median, was 155.9 g/day [16] and was comparable to the data from the Central Statistical Office (GUS), according to which the average intake of vegetables in Poland was 150.7 g/day, and in the Lower Silesian voivodship it was 169.7 g/day [17]. It is well known the Mediterranean diet, which is rich in fruits and vegetables, prevents the occurrence of several civilizational diseases, and is also an important factor in cancer prevention [18]. According to the principles of a healthy lifestyle, the consumption of fruit and vegetables among soldiers should be increased. Research on the quality of diet among dietetics students showed a high

consumption of fruit and vegetables, and a low intake of cereal products [19]. The soldiers examined in this study revealed the consumption of white and brown bread (probably interchangeably), meat, dairy products, butter, cheese, eggs, and above all sugar, several times a week, while groats were eaten once a week on average. It is alarming that low quality cold meats (sausages, luncheon meat, bacon, etc.) were eaten every day. Hyżyk et al. [20], in analysing the diets of soldiers in selected military units in the years 2006/2007, stated that the examined population was characterized by incorrect nutrition. The authors demonstrate that the energy value of daily food rations provided for the soldiers' nutrition significantly exceeded the current obligatory standards in the army. Gażdźńska et al. [21] have also observed increased values of some nutrients and energy in the daily food rations of students from the Polish Air Force Academy (PAFA) in Dęblin.

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Rules for dealing with dental impressions and plaster models in an orthodontic surgery and laboratory in order to prevent cross-infection

Zasady postępowania z wyciskami i modelami gipsowymi w gabinecie i pracowni ortodontycznej w celu zapobiegania infekcjom krzyżowym

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Abstract The study aimed to assess the cooperation between orthodontists and technicians, in the field of disinfection procedures and the identification of the work stages that may allow cross-infection while making impressions and plaster models. The research material comprised the answers to survey questions provided by participants of the 21st Congress of the Polish Orthodontic Society and the 3rd Congress of Polish Orthodontic Technician Society in 2018 in Wrocław. The obtained data was also analysed in relation to scientific publications and binding regulations of law. The survey concerned procedures related to dental impression disinfection and the mutual knowledge of these procedures between physicians and technicians. In the analysed literature, special attention was paid to the need to establish detailed procedures related to the disinfection, transport, and handling of impressions and orthodontic appliances between an orthodontic surgery and technical laboratory. The mutual knowledge of impression decontamination procedures is insufficient among technicians and physicians. Disinfection of an impression and marking it as sterilized in the surgery is essential to limit the transmission of microbes to the laboratory. It is necessary to implement common, unified procedures for the decontamination of impressions and appliances for orthodontic surgeries and laboratories.

Keywords: cooperation in orthodontics, cross-infection, impressions disinfection

Streszczenie Celem opracowania była ocena współpracy lekarzy i techników zajmujących się ortodontcją w zakresie procedur dezynfekcji oraz identyfikacja etapów pracy, mogących powodować przeniesienie zakażeń krzyżowych podczas wykonywania wycisków i modeli gipsowych. Materiał do badań stanowiły odpowiedzi na pytania ankietowe udzielone przez uczestników 21. Zjazdu Polskiego Towarzystwa Ortodontycznego i III Kongresu Polskiego Towarzystwa Techniki Ortodontycznej w 2018 r. we Wrocławiu. Uzyskane dane przeanalizowano również w odniesieniu do publikacji naukowych oraz obowiązujących przepisów prawnych. Ankieta dotyczyła posiadanych procedur odkażania wycisków i wzajemnej znajomości tych procedur pomiędzy lekarzami a technikami. W przeanalizowanym piśmiennictwie zwraca się szczególną uwagę na konieczność ustalenia szczegółowych procedur odnoszących się do dezynfekcji, transportu i pracy z wyciskami oraz aparatami ortodontycznymi pomiędzy gabinetem ortodontycznym i pracownią techniczną. Wzajemna znajomość procedur odkażania wycisków jest niewystarczająca zarówno wśród techników, jak i lekarzy. Dezynfekcja i oznakowanie wycisku jako wyjałowiony po pobraniu w gabinecie jest niezbędna do ograniczenia transmisji drobnoustrojów do pracowni. Konieczne jest wdrożenie wspólnych, ujednoliconych procedur odkażania wycisków oraz aparatów ortodontycznych dla gabinetów i pracowni technicznych.

Słowa kluczowe: infekcje krzyżowe, dezynfekcja wycisków, współpraca w ortodontcji

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Introduction

Prevention of infection is an important element in the work of orthodontic personnel. The SARS-CoV-2 pandemic increased the requirements regarding the prevention of cross-infections and ensuring the safety of the employees and patients throughout the clinical and laboratory cycle of medical device production. Stricter hygiene standards apply to all members of orthodontic teams, in the surgeries and the technical laboratories. According to the WHO definition from 2010, a cross-infection is an infection acquired by a patient as a result of the conducted medical procedures or the infection of medical personnel members due to the performance of their professional duties [1]. The survey on the collaboration between the surgeries and technical laboratories was conducted in 2018, during the 21st Meeting of the Polish Orthodontic Society and the 3rd Congress of Polish Orthodontic Technician Society in Wrocław, and it included a section on the disinfection procedures used during the various stages of orthodontic work. The information collected in the survey illustrates the standards of collaboration for the prevention of cross-infection in 2018 and it may be invaluable for the process of developing procedures and recommendations for the time of the Covid-19 pandemic.

Aim of the study

The aim of the study was to assess the cooperation between orthodontists and technicians regarding disinfection procedures, as well as to identify the work stages that may result in the transmission of an infection between the orthodontic surgery and the technical laboratory while making impressions and plaster models. The practical aim of the study was to suggest disinfection procedures for surgeries and technical laboratories at the stage of impression making and model casting.

Material and methods

The research material consisted of the answers to the survey questions provided by the participants of the 21st Meeting of the Polish Orthodontic Society and the 3rd Congress of Polish Orthodontic Technician Society in Wrocław in 2018. The responses of 81 dental practitioners and 32 dental technicians were compared. Publications from the PubMed and Google Scholar databases were analysed. The obtained data was also analysed in reference to the current legal regulations.

Results

When asked about uniform procedures for the disinfection of impressions, undoubtedly microbiologically contaminated materials, 21% of physicians declared they did not have any (Fig. 1).

A total of 88% of the technicians asked whether they know the methods of disinfection of impressions in the orthodontic surgeries they cooperate with, gave positive answers. However, only 41% visited the surgery to learn about the disinfection procedures and establish the details of the process. Only 35% of physicians visited technical laboratories with the same goal (Fig. 2).

Based on the responses of the physicians surveyed, only 30% of technicians visited their practice to learn about the disinfection process (Fig. 3). A similar rate of physicians learnt about the procedures in the technical laboratories.

Discussion

Following Article 11 of the Act of 5 December 2008 on the Prevention and Control of Infections and Infectious Diseases in People, individuals providing medical services are obliged to undertake actions preventing the transmission of infections and infectious diseases.

These measures include:

- assessment of the risk of infection associated with the performance of health services;
- monitoring of alarm factors and infections associated with the provision of services;
- development, implementation and supervision over the procedures for the prevention of infections and infectious diseases, including decontamination of skin and mucosal membranes, medical devices and surfaces, rooms and devices;
- use of personal and collective protective equipment to prevent the transmission of biological pathological factors on other people (Art. 11 of the Act).

Considering the threat of SARS-CoV-2 infection, the established principles must be followed from the first contact with the patient in order to prevent the spreading of the virus, infection of the personnel and transfer of the contaminated material to the technical laboratory. The risk of direct transmission of the virus through the oral mucosa and caried tissues is considered to be high [2, 3]. A particularly high level of professional risk is associated especially with the procedures using the air-water spray nozzles, conducive to the formation of aerosol containing particles of saliva and blood, and contaminating the work environment [3]. According to the data from the tele-information EWP System of the Ministry of Health and from the National Register of Patients with COVID-19, in Poland up to 1/12/2020 infection with SARS-CoV-2 was

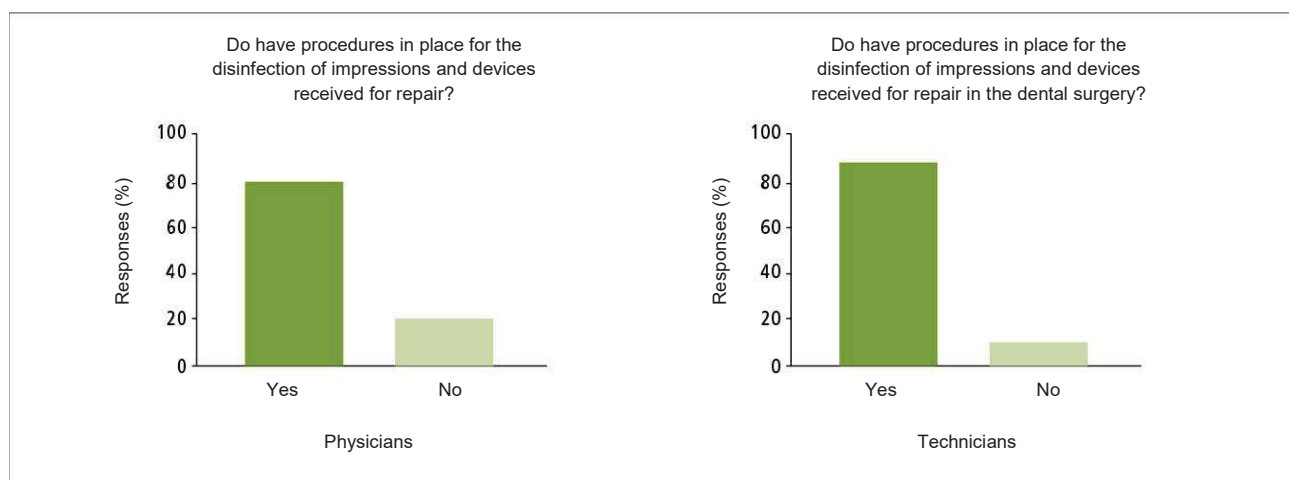


Figure 1. Dental impression disinfection procedures in surgeries and dental laboratories

Rycina 1. Procedury odkażania wycisków w gabinecie i pracowni technicznej

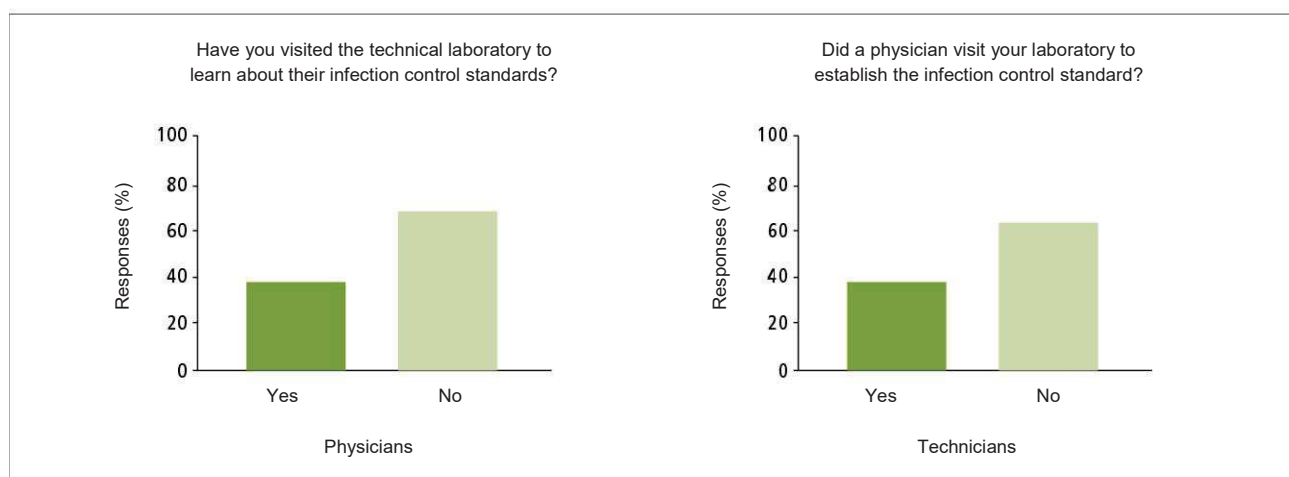


Figure 2. Dentist's visits to technical laboratory to establish disinfection procedures

Rycina 2. Wizyty lekarza w pracowni technicznej w celu ustalenia procedur dezynfekcji

found in 1,407 dental practitioners, and 6 of them died. However, it was not established if they had been infected in the practice setting.

SARS-CoV-2 infection results in respiratory diseases that may be mild or severe and lead to respiratory failure. The symptoms resemble flue infections. Before the pandemic, patients were qualified for treatment after their arrival at the surgery. Considering the SARS-CoV-2 infection hazard, additional initial qualification of patients by telephone was introduced in order to determine their current health status and the presence of risk factors [3, 4]. During the first wave of the pandemic in March 2020, Meng et al. recommended delaying any dental treatment until 14 days after the exposure to the virus, even in

asymptomatic patients who were in contact with an infected individual and/or travelled to an area with a high risk of infection. In patients who did not have such contact or were asymptomatic, dental procedures could be performed, provided that special safety measures were undertaken [3]. During the initial patient qualification by telephone, patients were to provide answers to a set of questions regarding the occurrence of symptoms and potential exposure to infection. The initial medical history was to assess the risk of exposure to SARS-CoV-2. Patients could be admitted only if their answers to the questions regarding contact with an infected person or the occurrence of symptoms of infection were negative.

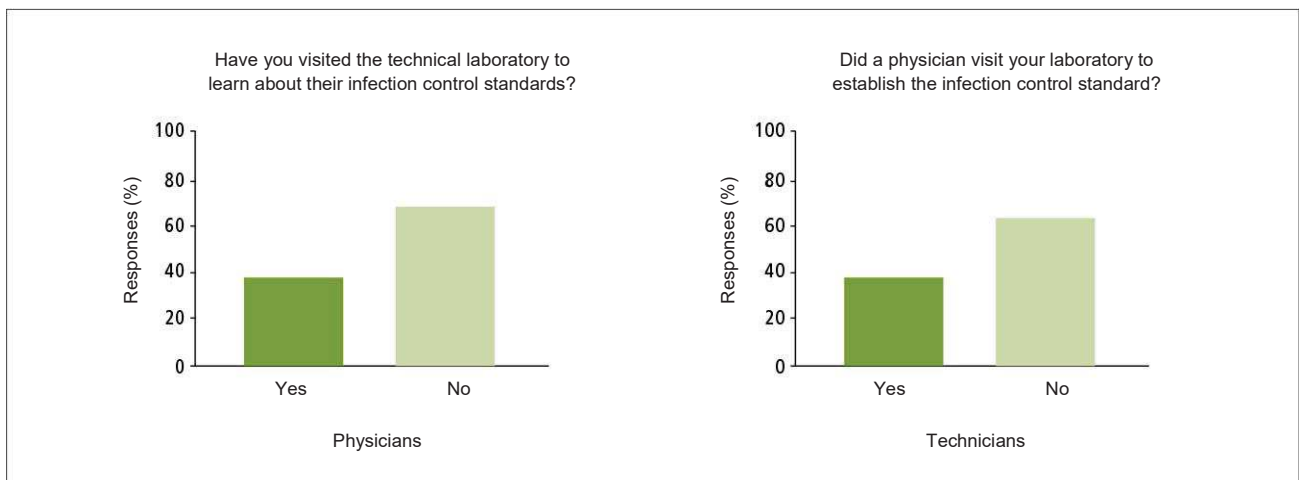


Figure 3. Technician's visits to a surgery to learn infection control procedures

Rycina 3. Wizyty technika w gabinecie w celu poznania procedur kontroli infekcji

Otherwise, it was recommended to postpone the appointment [5].

After the arrival of the patient qualified for a visit to the surgery, four steps are to be undertaken: final qualification, patient's entry to the surgery, dental/orthodontic treatment and post-treatment procedures and leaving the surgery. All these steps should be supervised by an employee of the surgery.

Before the beginning of the visit, the medical history should be taken again, and patient's body temperature should be measured with a touchless thermometer. If the temperature exceeds 37.5°C, the treatment should be postponed. Patients with normal temperature should disinfect their hands. It is recommended to remove from the passages all the objects that could potentially be contaminated (e.g. tables, magazines or toys) that could become a source of cross-contamination. It is also important to reduce the number of patients in the waiting room and the time they spend there. The persons accompanying the patient should remain outside. Patients should leave their clothes, mobile phones and bags in the waiting room, in a specially designated place. All surfaces touched by patients should be disinfected with an 0.1% solution of sodium hypochlorite or 70% isopropyl alcohol. Before the procedure, in order to reduce the virus load in the saliva, the patient should rinse the oral cavity with 1% hydrogen peroxide for at least 1 minute [2].

All employees should have personal protection equipment (single-use gowns, masks, face shields, gloves). Effective room ventilation should be ensured and windows should be opened frequently. The use of UV lamps, ozonation and fumigation are recommended.

Microorganisms other than SARS-CoV-2 should also be taken into consideration. The medical personnel and patients are exposed to all kinds of cross-infections via four routes: through contact, absorption, inhalation and injection [6]. Failure to follow the principles of hygiene, asepsis and antisepsis by the employees during work may result in infection of patients or other workers. Inadequately disinfected devices or tools used for procedures may be a source of infection. In order to reduce the risk of infection, preventive procedures should be implemented and each patient should be treated as a potential source of infection [7, 8]. Studies by Powell et al. demonstrate that 67% of all impressions sent to dental laboratories are contaminated by various microorganisms, most often by *Streptococcus*, *Staphylococcus*, *Actinomyces*, *Antitratrus*, *Pseudomonas*, *Enterobacter*, *Candida*, *Escherichia coli* and *Klebsiella pneumoniae* [9]. The World Dental Federation (FDI), as well as the American Dental Association (ADA), recommend disinfection of all impressions prior to sending them to a laboratory [10].

The risk of transferring cross-infection from a surgery to a laboratory (and vice versa) is high. The 2018 surveys regarding cooperation demonstrate that the majority of physicians worked with two or more technicians (68%). Only 11% of physicians had a technical laboratory in their surgery. None of the surveyed technicians worked with one physician only, and as many as 65% collaborated with over five physicians, often in different surgeries. This model contributes to the transfer of infection between surgeries through the laboratory. The analysis of the responses regarding the disinfection procedures and infection control procedures in an orthodontic surgery and in a laboratory provides unsettling results. It demonstrates

that only one in three practitioners and technicians visited the surgery or laboratory they collaborate with in order to establish the standards of cross-infection prevention. Such a visit may be very useful in determining the conditions, mutual requirement and standards of cooperation [11].

Intraoral scanners are increasingly popular in orthodontics. They eliminate the need to transfer impressions from the surgery to the laboratory, and thus the risk of cross-infection at this stage of cooperation. In this case, it is important to ensure sterility of the scanner tip and to avoid simultaneous contact with the keyboard and/or computer screen by the scanning personnel.

Despite the implementation of advanced technologies, classic impressions are still commonly used in orthodontic practice. At the treatment planning stage, they are made to reflect patient's occlusal pattern and to prepare diagnostic models. In order to make orthodontic appliances for the adjustment of teeth or retainers, work models are cast using impressions. This stage is the first link in the chain of potential cross-infections. Studies on the procedures of impression disinfection in general dental surgeries in Great Britain revealed that control of cross-infections is not sufficient. In nearly one in three cases the technicians were not sure whether the impressions had been disinfected in the surgery, and 15% of impressions was clearly contaminated by blood and saliva. Most orders did not contain written information about disinfection at the surgery [12].

The majority of dental technicians do not know whether the impressions had been disinfected at the surgery [13]. Also dentists providing impressions have limited knowledge of the disinfection procedures at the dental laboratory [11]. In their study Pang and Millar asked physicians: "Does the technician disinfect impressions prior to casting?". Most respondents (72%) declared they did not know. It should be clearly stated that the dentist is responsible for informing the technician that impressions had been cleaned and disinfected before they were sent to the laboratory. Numerous studies confirmed that good practice involves agreeing on the process of cleaning and disinfection of impressions with the technical laboratory, and marking the disinfection status in the documentation [11, 13]. Researchers also emphasise that if technicians are not aware of the disinfection procedures in the surgery, it creates a risk of repeating the disinfection in the laboratory, which adversely affects the quality of the impression [12].

In the case of classic impressions, using a sterile impression tray and the sterilisation of bowls and spatulas used for preparing putties or alginate mixers is an understandable requirement. Following the current standards, before the impression is taken, the patient must rinse their mouth with a warm chlorhexidine solution

or 1% solution of hydrogen peroxide for at least 1 minute. After removing the impression from the patient's mouth, it should be rinsed with running water to remove blood and saliva. Certain studies demonstrate that rinsing impressions with running water removes 40-90% of microorganisms [14, 15], while others did not reveal any significant disinfecting effect of running water alone [16]. Next, the impression should be disinfected by immersing it in a solution (for 10-15 minutes) or by spraying disinfectant on its surface. If disinfected by soaking, the impression should be rinsed with water, wrapped in a paper towel and placed in an airtight bag [10]. If spray was used, the impression should be placed in a zip lock bag, without rinsing [17]. The disinfected impressions should be transported to the laboratory in a single-use or disinfectable container.

In using alginate impressions, one should limit the factors that could result in inaccuracies during impression taking, storage and transportation [11, 12, 18]. Alginate putty is characterised by a high degree of microbial retention, not only on the surface, but also inside the impression. Sterilisation would be optimal to eliminate the microorganisms. However, it is not feasible, as high temperature damages the impression.

Two forms of disinfection are available: immersion in a disinfecting solution or using a spray. They both offer certain benefits and disadvantages. The soaking method is more effective, as the disinfecting solution works on the entire surface of the impression, whereas spray works only on the application areas. On the other hand, using disinfecting spray is associated with lesser deformation of the impression compared to immersion in the disinfectant, although it does not provide sufficient decontamination. The spray does not penetrate into the porous areas, working only on the surface of the impression [19]. The hydrocolloid nature of alginate putties limits the use of disinfection by immersion; however, if performed with the use of dedicated agents and following the manufacturer's recommendations, this method of disinfection does not affect the linear dimensions of models [10]. According to the majority of authors, the safe soaking time is 10 to 15 minutes [20, 21]. According to Taylor et al., 10-minute immersion of alginate impressions in a disinfecting solution may result in a beneficial absorption that compensates for the shrinking of the alginate putty during the setting of gypsum [21].

Caution should be exercised during disinfection by immersion, as not every impression material is compatible with a given disinfectant. The composition and concentration of the solution, as well as time of exposure, are all important. For the disinfection of alginate impressions, the most recommended agents include: 5.25% solution of sodium hypochlorite (immersion for 10 minutes), 2% glutaraldehyde, Iodofo spray, 0.5%

chlorhexidine in 70% alcohol (20 minutes) and 3.3% Savlon in 70% alcohol. For the disinfection of silicone impressions, the following are used: 1% or 5.25% sodium hypochlorite (10 minutes), ammonium compounds (5 minutes) and 3% hydrogen peroxide (10 minutes). Each of these agents demonstrates sufficient effectiveness, and is safe for the quality of impressions, if used in compliance with the recommended procedures [22, 23]. The preparations for the disinfection of impressions through immersion available of the Polish market include Zeta 7 Solution (Zermack), MD 520 (Durr Dental) and Aseptoprint Liquid (OCC). The following sprays are also available for disinfection of impressions: Zeta 7 Spray (Zhermack), NDO Desytol (Novadan ApS), Prosept Impression (OCC), Aseptoprint Spray (OCC) and Omnisept IMP (OmniDent). Many authors underline the insufficient number of studies regarding the effect of alcohol-based disinfectants with alginate putty [23, 24]. According to Szerszeń et al., alcohol-based disinfectants should not be used for the storage of alginate impressions, as they reduce the size of the samples tested [18].

Safety measures should be applied in a dental laboratory, as all materials received from dental surgeries may be potentially contaminated. In the laboratory they should be always unpacked in one place, especially designated for this purpose, by an employee trained in disinfection procedures. Once an impression that was properly prepared in a dental surgery and marked as disinfected is unpacked, it should be rinsed with running water. This enables the removal of the remains of any disinfectant that could obscure the details on the surface of the gypsum cast and cause tissue irritation in an employee. If the technician suspects that impression not been decontaminated properly, it has to be disinfected. All the single-use packaging from dental surgeries must be disposed of. Work surfaces at the site where impressions are received should be regularly cleaned and disinfected [26].

The model surface may be contaminated with microorganisms from the impression. During model casting the technician should wear gloves and goggles. A "clean" zone should be established in the laboratory and the cast models should be stored there until the gypsum hardens. This should never be in the same place as the reception of impressions. Oral cavity bacteria may survive in set gypsum for up to 7 days. Therefore, the surface of the gypsum cast should be disinfected with spray disinfectant to reduce the risk of further transmission of microorganisms to orthodontic appliances [19].

In summary, we present the proposed protocol for taking impressions in orthodontic patients during the pandemic.

I. Orthodontic surgery

1. Triage, initial qualification over the phone
2. Final qualification after the arrival of the patient at the surgery (taking the body temperature, medical history, survey)
3. Mouth rinsing before the procedure with 1% solution of hydrogen peroxide for 1 minute
4. Rinsing of the impression with running water for 30 seconds
5. Immersion of the impression in a special disinfecting solution (10-15 minutes, following the manufacturer's recommendations)
6. Rinsing of the impression with running water
7. Wrapping the impression in a paper drape and placing it in a zip lock bag
8. Marking the impression as disinfected
9. Placing impressions in a single-use or disinfected container

II. Technical laboratory

1. Rinsing the impression with running water to remove any potential remains of the disinfectant
2. If it is suspected that the impression has not been disinfected – disinfection by immersion in a dedicated agent
3. Disposal of single-use packaging from the dental surgery and disinfection of other containers
4. Disinfection of model casts with spray disinfectant

Conclusions

- The mutual knowledge of impression decontamination procedures is insufficient among technicians and physicians.
- Disinfection of an impression and marking it as sterilised at the surgery is essential to limit transmission of microbes to the laboratory.
- It is recommended to designate special zones in the laboratory for the reception of impressions, casting and setting of gypsum casts, and for further work associated with the production and repair of orthodontic appliances. The passages between the work zones should not cross.
- It is necessary to introduce common, unified procedures for the decontamination of impressions and models for orthodontic surgeries and technical laboratories.

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Rules for dealing with orthodontic appliances in an orthodontic surgery and laboratory in order to prevent cross-infection

Zasady postępowania z aparatami w gabinecie i pracowni ortodontycznej w celu zapobiegania infekcjom krzyżowym

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Abstract The study aimed at assessing the cooperation of orthodontists and dental technicians, in the field of disinfection procedures and identification of the stages of work that can lead to cross-infection at the stages of making and repairing orthodontic appliances. The research material comprised answers to the survey questions provided by participants of the 21st Congress of the Polish Orthodontic Society and the 3rd Congress of the Polish Orthodontic Technician Society 2018. The obtained data was also analysed in relation to scientific publications and binding regulations of law. The survey concerned the decontamination of appliances in the surgery before handing them over to a patient and in the laboratory before handing them over to the surgery. Moreover, technicians were asked about using the same equipment and tools in the laboratory to make new and repair used devices, and the frequency of polishing pumice replacement. The analysed publications stated that pumice can be significantly contaminated with pathogenic microorganisms, and its daily replacement and disinfection should be obligatory. The duties of the orthodontic surgery and dental laboratory staff include proper disinfection of the manufactured and repaired orthodontic appliances and written confirmation of the disinfection procedures carried out. It is necessary to learn and implement common, unified procedures for the decontamination of impressions and appliances used in orthodontic surgeries and technical laboratories.

Key words: cooperation in orthodontics, cross-infection, disinfection of appliances, disinfection of pumice

Streszczenie Celem pracy była ocena współpracy lekarzy i techników zajmujących się ortodontcją w zakresie procedur dezynfekcji oraz identyfikacja etapów pracy mogących powodować przeniesienie zakażeń krzyżowych na etapie wykonania i napraw aparatów ortodontycznych. Materiał do badań stanowiły odpowiedzi na pytania ankietowe udzielone przez uczestników 21. Zjazdu Polskiego Towarzystwa Ortodontycznego i III Kongresu Polskiego Towarzystwa Techniki Ortodontycznej w 2018 r. we Wrocławiu. Uzyskane dane przeanalizowano również w odniesieniu do publikacji naukowych oraz obowiązujących przepisów prawnych. Ankieta dotyczyła odkażania aparatów w gabinecie przed oddaniem pacjentowi oraz w pracowni przed oddaniem do gabinetu. Zapytano również o używanie tego samego sprzętu i narzędzi w pracowni do wykonywania nowych i napraw używanych aparatów oraz o częstotliwość wymiany pumeksu polerskiego. W analizowanych publikacjach stwierdzono, że pumeks może być w istotnym stopniu skażony drobnoustrojami chorobotwórczymi, a jego codzienna wymiana i odkażanie powinno być obligatoryjne. Do obowiązków personelu gabinetu ortodontycznego i pracowni technicznej należy prawidłowa dezynfekcja wykonywanych i naprawianych aparatów ortodontycznych, a także pisemne potwierdzenie wykonanej procedury dezynfekcji. Istnieje konieczność poznania i wdrożenia wspólnych, ujednoliconych procedur odkażania wycisków i aparatów dla gabinetów ortodontycznych i pracowni technicznych.

Słowa kluczowe: infekcje krzyżowe, odkażanie aparatów, dezynfekcja pumeksu, współpraca w ortodontcji

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Introduction

Prevention of infections is an integral part of the work of orthodontists. The COVID-19 pandemic strengthened the requirements regarding protection against and prevention of infection transmission to be followed by the entire orthodontic team. According to the WHO, cross-infections are those acquired by a patient as a result of the conducted medical procedures and the infections of medical personnel members due to the performance of their professional duties [1]. Due to the need to ensure the safety of patients and personnel during clinical and laboratory work, the disinfection procedures in the surgery and the laboratory, as well as the stages of cooperation associated with an increased risk of transmission of infection, must be analysed carefully. Infection prophylaxis in the dental surgery ensures the comfort and safety of the dental practitioner and the assisting personnel, preventing the exposure of patients to infection [2]. This article presents an analysis of the procedures for the prevention of infection transmission in the dental surgery and the technical laboratory, as well as the risks associated with the preparation and delivery of new orthodontic appliances or previously used appliances that require modification or repair.

Aim of the study

The aim of the study was to evaluate the cooperation between dental practitioners and orthodontic technicians regarding disinfection procedures at the stage of preparation and delivery of new orthodontic appliances and the management of the appliances previously used by the patient that required modification or repair. The other aim was to identify the work stages that may be associated with increased risk of cross-infection between the surgery and laboratory, and vice versa.

Material and methods

The research material comprised answers to the survey questions provided by participants of the 21st Congress of the Polish Orthodontic Society and the 3rd Congress of Polish Orthodontic Technician Society in Wrocław in 2018. The study involved 81 dental practitioners and 32 dental technicians. Publications from the PubMed and Google Scholar databases were analysed and compared with the information collected in the survey. The obtained data was also analysed in reference to the current legal regulations.

Results

According to the survey responders, only half of the dental practitioners disinfected new appliances after receiving them from the laboratory and before handing them to patients. Unfortunately, only half of the technicians sterilised the appliances after they were finished. Therefore, many of the new appliances given to patients could be microbiologically contaminated.

Regarding the repair and modification of the appliances previously used by patients, 64% of devices were disinfected in the surgery before they were sent to the laboratory.

Only half of the appliances were disinfected in the laboratory following the repair. It is a considerable problem, as 76.5% of technicians declared that they work using the same tools and equipment while working on new or used appliances.

Two technicians admitted that they do not change the polishing pumice, but added more to it. A total of 19% of technicians declare that they change the pumice once a month, 69% do it every week, and only 12% do it every day.

Based on the survey results, 70% of dental practitioners never visited the technical laboratory to learn about the disinfection procedures and the conditions in which orthodontic appliances are made.

Discussion

Dental practitioners, since they bear responsibility for the appliance given to the patient and for its safe use, need to understand that, contrary to dental surgeries, the majority of technical laboratories are not under epidemiological supervision. The regulations regarding the scope of competences of dental technicians are found in the "Decree of 5th July 1946 on the performance of technical dental tasks" and "Minister of Health regulation of 15th May 1951 on the detailed scope of competences of certified dental technicians", which are still in force. Some technical laboratories form parts of healthcare facilities, but most of them operate independently. In such a case, they are treated as any other non-medical entity hiring employees: they are bound by the Occupational Health and Safety regulations and work environment regulations, but without the obligatory site acceptance by the Sanitary and Epidemiological Station.

Many modern technical laboratories operate according to high European standards. However, there are also some that cannot ensure appropriate sanitary conditions during the preparation of custom medical devices. If a laboratory is opened as part of a healthcare facility, the acceptance of the Sanitary and Epidemiological Station is required, as this institution

issues the administrative decision necessary for the registration of such entity in the Health Department of the respective Voivodship Office. The detailed technical and sanitary requirements regarding the premises and equipment in a dental laboratory are listed in the “Minister of Health and Social Welfare regulation of 21st September 1992 on the requirements regarding the technical and sanitary condition of the premises and equipment of a healthcare facility”. Although this legal act has been revoked, the subsequent amendments to the act do not contain any information regarding technical laboratories. Attachment 4 to the act includes only the recommendations regarding the installation of gas, oxygen and compressed air supply systems, gypsum setting plant, mechanical ventilation and dust absorption system in the laboratory. Further regulations, including the most recent one – Official Journal of Laws of 2019, item 595 – do not mention the profession of dental technician. In order to minimise the occurrence of cross-infections, the development of uniform rules for all technical laboratories, respecting the requirements regarding premises, as well as the implementation of epidemiological supervision are desirable. Based on the survey responses, only one in three physicians visited the laboratory they collaborate with to establish the standards of infection prevention. Such a visit may be very useful to determine the conditions of cooperation and mutual requirements [3, 4].

The risk of transmission of microorganisms during repairs or modifications of previously used appliances cannot be eliminated completely. Due to the properties of acrylic material, orthodontic appliances cannot be sterilised. They definitely should be disinfected in the surgery, before transportation to the laboratory, packed in a zip lock bag and a disinfected container, and marked as decontaminated. Such a procedure would limit the risk of microbial transmission during the transportation of the appliance to the laboratory, which often involves people who are not the surgery or laboratory employees, e.g. couriers or taxi drivers. Their safety should also be considered, especially during the COVID-19 pandemic. The Minister of Health recommendations related to the pandemic do not include the management of orthodontic appliances delivered to patients. The recommendations regarding dentures include immersing them for 30 minutes in a 0.5–1% aqueous solution of hydrogen peroxide and irradiation under a UVC lamp for 30 minutes for dentures placed in a plastic bag. This procedure is also appropriate for orthodontic appliances (Minister of Health recommendation of 5/05/2020 - www.infodent24.pl).

In order to limit the transmission of microorganisms within the technical laboratory, separate zones should be established for the production of new appliances and the repair of used ones. The repair and modification station

should be equipped with guards protecting against dust spreading during the processing of acrylic material, as well as with extraction units and an air filtration and ventilation system.

The common practice of using the same equipment for the production of new orthodontic appliances and the repair or modification of appliances used by patients for many months should be criticised. The most problematic stage, considering the risk of infection transmission, is polishing of the orthodontic appliance using pumice [5, 6]. To limit microbial transmission, the pumice suspension should contain sodium hypochlorite. The pumice slurry should be changed daily, after disinfection of the container. In our survey only 12% of respondents confirmed they followed this procedure. Polishing brushes also should be disinfected with sodium hypochlorite, and the disinfecting solution should be changed daily [5]. Samples of pumice solution were found to be strongly contaminated with pathogenic organisms. The test was repeated after the addition of bactericidal and virucidal disinfectant to the pumice. The number of bacterial colonies was reduced, which demonstrates that routine disinfection of pumice solution is desirable [6].

A study by Firoozeh et al. revealed that in 66.7% of dental laboratories the polishing pumice was contaminated with numerous pathogenic colonies, including *Staphylococcus aureus* (15.4%), *Streptococcus viridans* (10.8%), *Bacillus cereus* (18.7%), *Pseudomonas aeruginosa* (12.8%), *Escherichia coli* (13.1%), *Klebsiella pneumoniae* (5.4%) and very common *Candida albicans* yeasts (36.7%). The pathogens were identified as microorganisms of oral and extraoral origin. In conclusion, the authors proposed the following recommendations regarding work with pumice: using sterile pumice, adding 0.2% solution of chlorhexidine or 5% solution of sodium hypochlorite, daily complete exchange of the pumice slurry and thorough cleaning and disinfection of the container and the remaining equipment [7-9]. It was demonstrated that bacteria other than those living in the oral cavity remained in the tested pumice suspension for a few months [8].

The microorganisms from pumice may spread across the laboratory in the form of aerosols sprayed during the polishing process, resulting in a risk for the people working in the environment. Microbiological contamination of orthodontic appliances poses an important problem, as it is dangerous for immunodeficient patients and those with chronic diseases [8].

Based on the responses of the surveyed technicians, only a few exchange pumice daily, while others do it once a week or less often, which, in the context of infection control, is insufficient and hazardous. In a study by Jagger, over 60% of technicians did not disinfect pumice, and as many as 93% did not disinfect the instruments they

used [10]. In the training of technicians, more emphasis should be put on the risks of infection and infection prevention [9].

The effectiveness of disinfection of metal and acrylic in ready orthodontic appliances with 5.25% sodium hypochlorite was confirmed by Sanders et al. They found that the disinfectant is effective not only on the surface, but it also penetrated up to 3 mm into the acrylic material [11].

According to Verran et al., relatively little attention is paid to infection control in dental laboratories, possibly due to an apparent distance from the patients, lack of proper training and few studies conducted in this area. They indicated the need for studies to identify potential risks associated with technical procedures, but they did not find any evidence of bacterial cross-contamination brought by patients to the laboratory following the application of proper disinfection procedures [12]. However, the microbiological contamination of products leaving laboratories was detected, and the microorganisms did not originate in the oral cavity, but in the laboratory [13]. A Brazilian team demonstrated that 85% of acrylic appliances leaving technical laboratories were microbiologically contaminated [14].

Dental practitioners are obliged to minimise the potential risk of cross-infection in patients and other team members. Significantly less attention is paid to the contamination originating from technical laboratories, so the risk of microbiological contamination at this stage of production of orthodontic appliances has not been fully understood [12]. All orthodontic appliances leaving a laboratory should be disinfected to prevent the transmission of microorganisms from the laboratory to the patient [10]. The presented studies demonstrate that effective disinfectants for orthodontic appliances include products with sodium hypochlorite [11, 12] and a 2% solution of chlorhexidine, which reduces the microbiological contamination by 91.3% [14].

The analysis of the data regarding disinfection of appliances by technicians prior to sending them to the dental surgery, and by the physicians before giving the appliance to the patient, clearly shows that the risk of contamination and cross-infection is high. Therefore, the introduction of uniform procedures for the prevention of cross-infections in the technical laboratory and in the orthodontic surgery should be considered. They should be known to all the employees at the practice and made available to laboratories, and vice versa – all employees of the laboratory must be familiar with the document presenting the procedures, and the document should be made available to the practice with which the laboratory cooperates. This will ensure a sense of security at work for both parties, and will protect patients against the transmission of infections.

The recommendations regarding infection control during the production of an orthodontic appliance include:

- proper disinfection of impressions in the surgery, with a description of the procedure provided with the impression;
- following the disinfection procedures;
- maintaining the highest level of sterility in the technical laboratory during all the activities associated with model casting and appliance production.

It should be emphasised that the errors during the production of one appliance may result in cross-contamination of all the appliances manufactured at that time. While casting, it is important to ensure sterility of the gypsum, bowls, spatulas and mixers. After the model sets, it should be sprayed with a disinfectant. Disinfection of work surfaces, cleaning and disinfection of cutters for the gypsum models and gypsum setting stations is crucial. Establishing separate zones for the production of new appliances and the repair of used ones is recommended, so that there is no contact between them during the production process. Regular disinfection of forceps for bending and cutting wires, knives, cutters, stones, burs and polishing tools, as well as the disinfection and exchange of pumice, should be standard procedures in every laboratory. The appliances sent to the dental practice must be sterilised by immersion in a disinfecting solution and marked as disinfected, and second disinfection of the surface of the appliance should be performed in the surgery. Adherence to the rules of hygiene by the employees at the technical laboratory, e.g. thorough and frequent hand washing, cleaning of tables and counters, disinfection of working surfaces, door handles, telephones and computer keyboards, is of the utmost importance, as – following the literature reports – microorganisms found on orthodontic appliances leaving laboratories are mostly of extraoral origin [13]. It is worth emphasising that the responsibility for the appliance given to the patient and for the safety of its use lies with the physician.

Conclusions

- The responsibilities of the personnel at an orthodontic surgery include proper disinfection of the appliances that are damaged or require modifications before they are passed on to the technical laboratory, as well as providing a written confirmation of the disinfection procedure. The disinfected appliances should be placed in zip lock bags and disinfected containers.
- All the orthodontic appliances leaving the technical laboratory must be disinfected, and marked as such.
- Establishing separate zones for the production of new appliances and the repair of used ones, as well as

using separate equipment and tools reduces the risk of cross-infection in the technical laboratory.

- 0.2% chlorhexidine or 5% sodium hypochlorite should be added to the polishing pumice. The daily exchange of the pumice and disinfection of containers are essential.
- It is necessary to learn and implement common, uniform procedures for decontamination of impressions and appliances for the cooperating orthodontic surgeries and technical laboratories. Visiting the laboratory is recommended to the dental practitioner, and visiting the dental surgery is recommended to the technician. It is worth emphasising that physician is responsible for the appliance given to the patient and for the safety of its use.

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Third molar germ presence assessment in patients with an age of 10 years on orthopantomographic radiographs

Ocena obecności zawiązków trzecich zębów trzonowych u pacjentów w wieku 10 lat na podstawie zdjęć ortopantomograficznych

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Abstract The third molars are the most diverse teeth in human dentition in terms of morphology and size. Their buds are formed between 20th week of gestation and 5th year of age, and their eruption occurs between the 16th and 25th year of age. The development of third molars is assessed mainly on orthopantomographic radiographs, and the first signs of development of these teeth should be visible in the image before the age of 10 years. The aim of this study is to assess the presence of third molars in children aged 10 years on the basis of orthopantomographic radiographs. The analysed pantomographic images of 111 patients of the Specialist Military Orthodontic Unit in Poznań showed the presence of third molars in 87 patients (78.38%). The results of the study showed that at the age of 10 years, the patients examined at the Specialist Military Orthodontic Unit in Poznań, at the age of 10 years had a third molar development stage similar to the stages reported in the scientific literature.

Keywords: assessment of tooth development, pantomographic radiographs, teeth germs, third molars, wisdom teeth

Streszczenie Trzecie zęby trzonowe to najbardziej zróżnicowane pod względem morfologii i rozmiaru zęby w ludzkim uzębieniu. Ich zawiązki powstają między 20. tygodniem życia płodowego a 5. rokiem życia, a do ich wyrżnięcia dochodzi między 16. a 25. rokiem życia. Rozwój trzecich zębów trzonowych oceniany jest głównie na radiologicznych zdjęciach ortopantomograficznych, a pierwsze oznaki rozwoju tych zębów powinny być widoczne na zdjęciu przed ukończeniem 10. roku życia. Celem niniejszej pracy jest ocena obecności zawiązków trzecich zębów trzonowych u dzieci w wieku 10 lat, na podstawie radiologicznych zdjęć ortopantomograficznych. Przeanalizowane zdjęcia pantomograficzne 111 pacjentów Poradni Ortodontycznej Wojskowej Specjalistycznej Przychodni Lekarskiej w Poznaniu w wieku 10 lat wykazały obecność zawiązków trzecich zębów trzonowych u 87 pacjentów (78,38%). Wyniki badania wykazały, iż pacjenci Poradni Ortodontycznej Wojskowej Specjalistycznej Przychodni Lekarskiej w Poznaniu w wieku 10 lat mają stadium rozwoju zawiązków trzecich zębów trzonowych zbliżone do stadiów zgłaszanych w literaturze naukowej.

Słowa kluczowe: trzecie zęby trzonowe, zęby mądrości, zdjęcie pantomograficzne, zawiązki zębów, ocena rozwoju zębów

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Introduction

The third molars are the most variable teeth in human dentition in terms of morphology and size. They do not have a specific crown shape or a constant number of cusps. The morphology of dental roots and their canals is also varied, and may differ significantly from that of other molars. The third molars are the last ones to develop and erupt. Their buds are formed between 20th week of gestation and 5th year of age, and their eruption occurs between the 16th and 25th year of age. However, they are often impacted in the bone tissue, which prevents their proper eruption.

The assessment of the development of a third molar is of great clinical importance. It allows the physician to predict whether the tooth will erupt properly or its eruption will be impeded. Therefore, such assessment supports the decision regarding the time of potential extraction of the impacted tooth and helps to determine how difficult the surgical procedure would be. In addition, the assessment of the stages of development of the third molar is an important factor in the process of decision making and planning of orthodontic treatment. It is also a necessary element in the planning of dental treatment within other specialisations than those mentioned above, and in the planning of other procedures, such as dental autotransplantation, surgical treatment of gnathic defects and many other operations.

The development of the third molars is assessed primarily on radiographic images – pantomographs. The first signs of the development of these teeth should be visible in the radiographic images in patients aged approximately 7-8 years old [1]. However, the literature data demonstrate that certain factors (hormonal, dietary, genetic, climatic and environmental) may affect individual development, and also the development of third molar germs [2].

Aim of the study

The aim of this study is to assess the presence of third molars in children aged 10 years old, based on orthopantomographic radiographs.

Material and methods

Patients aged 10 years old were selected from those visiting the Orthodontics Clinic at the Military Specialist Outpatient Clinic in Poznań. Patients with current orthopantomographic images were included in the study. Excluded from the study group were the radiographs that were faulty, suggestive of hypodontia or the images of patients with general systemic diseases affecting dental development.

The developmental stage of dental germs on the orthopantomographs was evaluated based on the Demirjian classification [3], modified by Zandi et al. [4]:

- Stage 0 - a crypt is visible in an X-ray, no calcification
- Stage A - mineralisation of the cusp tips, without coalescence
- Stage B - mineralised cusp tips are unified, with a well-defined occlusal surface
- Stage C - nearly half of the dental crown is formed and dentinal deposition is starting
- Stage D - crown formation is complete to dentinoenamel junction
- Stage E - root length is less than the crown length
- Stage F - root length is equal to or greater than the crown length
- Stage G - root is completely formed, the apical opening is wide
- Stage H - apical ending is closed, the development of the tooth is completed

Results

A total of 111 patients meeting the inclusion criteria were selected from the population of 10-year-old patients of the Orthodontics Clinic at the Military Specialist Outpatient Clinic. The study group included 61 females and 50 males. The analysed pantomographic images showed the presence of third molars in 87 patients (78.38%). The third molar germs in the study group were most frequently found simultaneously in the maxilla and the mandible (66.67%), in females ($n = 42$) and in males ($n = 32$). The presence of germs only in the maxilla was demonstrated in 2 patients (1.80%), both female. The presence of germs only in the mandible was revealed in 11 patients (9.91%): 5 females and 6 males. Twenty-four patients had no third molar germs (21.62%). In this group 12 were females, and 12 were males.

The most frequently identified Demirjian developmental stage in the studied group was stage C ($n = 61$; 37.65%). In males, stage C was observed the most often ($n = 30$; 42.85%), both in the maxilla ($n = 14$; 43.75%) and in the mandible ($n = 16$; 42.11%). In females, stage C ($n = 31$; 34.06%) was found equally often as stage B ($n = 31$; 34.06%). In the groups of females, the third molar germs in the maxilla were most often at stage C ($n = 17$; 38.64%). Regarding the third molar germs in the mandible, the most frequently observed stage was B ($n = 20$; 42.55%). Other germs found in females were at stages 0 ($n = 7$; 7.69%), A ($n = 10$; 10.99%), D ($n = 10$; 10.99%) and E ($n = 2$; 2.20%). Regarding the other maxillary germs observed in the group of females, they were at stages 0 ($n = 1$; 1.10%), A ($n = 7$; 7.69%), B ($n = 11$; 12.09%), D ($n = 7$; 7.69%) and E ($n = 1$; 1.10%). Other mandibular germs found in females were at stages 0 ($n =$

Table 1. Presence of third molars germs in patients
Tabela 1. Obecność zawiązków trzecich zębów trzonowych u pacjentów

	Sex		Total
	Female	Male	
No germs	12	12	24
Germs present only in the 2 maxilla		0	2
Germs present only in the 5 mandible		6	11
Germs present both in the 42 maxilla and in the mandible		32	74
			111

Table 2. Presence of individual development stages of third molars in females according to the Demirjian method
Tabela 2. Obecność poszczególnych stadiów rozwojowych wg Demirjana trzecich zębów trzonowych u kobiet

	Demirjian stage								
	0	A	B	C	D	E	F	G	H
Maxilla	1	7	11	17	7	1	0	0	0
Mandible	6	3	20	14	3	1	0	0	0
Total	7	10	31	31	10	2	0	0	91

Table 3. Presence of individual development stages of third molars in males according to the Demirjian method
Tabela 3. Obecność poszczególnych stadiów rozwojowych wg Demirjana trzecich zębów trzonowych u mężczyzn

	Demirjian stage								
	0	A	B	C	D	E	F	G	H
Maxilla	1	5	10	14	2	0	0	0	0
Mandible	8	4	8	16	2	0	0	0	0
Total	9	9	18	30	4	0	0	0	70

Table 4. Presence of individual development stages of third molars according to the Demirjian method in the study group
Tabela 4. Obecność poszczególnych stadiów rozwojowych wg Demirjana trzecich zębów trzonowych w grupie badanych

	Demirjian stage								
	0	A	B	C	D	E	F	G	H
Maxilla	2	12	21	31	9	1	0	0	0
Mandible	14	7	28	30	5	1	0	0	0
Total	16	19	49	61	14	2	0	0	161

6; 6.59%), A (n = 3; 3.30%), C (n = 14; 15.38%), D (n = 3; 3.30%) and E (n = 1; 1.10%). In males, other germs were at stages 0 (n = 9; 9.89%), A (n = 9; 9.89%), B (n = 18; 19.78%) and D (n = 4; 4.40%). In the maxilla the germs were at stages 0 (n = 1; 1.10%), A (n = 5; 5.50%), B (n = 10; 10.99%) and D (n = 2; 2.20%), while in the mandible at 0 (n = 8; 8.79%), A (n = 4; 4.40%), B (n = 8; 8.79%) and D (n = 2; 2.20%). No dental germs at Demirjian stage E were found in males. Neither in females nor in males aged 10 years old were any germs at Demirjian developmental stages F, G and H found.

Discussion

Dental development starts early in the embryonic period. The process of tooth germ formation begins with dental lamina. Further developmental stages can be divided into a number of phases. The first one is the bud stage, followed by the cap stage, bell stage and the end of the development of the germ. The first dental germs that occur in human development, at approximately 6-8 weeks of embryonic life, are those of all the deciduous teeth. The germs of the permanent teeth develop in stages. The first germs to occur are those of the permanent incisors, canines and premolars, between the 20th week of foetal development and 10th month of the child's life. The germs of the permanent molars develop last, between the 20th week of foetal development and the 5th year of the child's life. The first sign of development of dental germs in a radiograph is the presence of tooth germ crypts [6, 7]. Then, according to the Demirjian classification [3], the cusp tips mineralise and, with time, they unite, forming the dental crown. The mineralisation of the third molars in the maxilla takes place at the approximate age of 7-9 years, and in the mandible at the approximately age of 8-10 years [5]. Therefore, we chose 10-year-old children as the study population, as theoretically they should have all four germs of the third molars in the initial stage of crown mineralisation. In accordance with the presented results, we found that in most (n = 87; 78.38%) patients the third molar germs were present both in the maxilla and in the mandible. However, the pantomographs of 24 patients (21.62%) did not reveal the presence of germs of the third molars in the maxilla or mandible. The most frequently observed Demirjian developmental stage was C (n = 61; 37.65%), which corresponds to the formation of nearly half of the dental crown, and the beginning of dentinal deposition. This shows that in most subjects aged 10-years-old the developmental stage of the germs of third molars was in compliance with the expected development of the dental crowns [8-12].

This study used the scoring system proposed by Demirjian to assess the third molar germs [3]. This classification was selected as a simple, precise and

repeatable method for the evaluation of the development of tooth germs. The method is non-invasive, and does not require the patient's presence. In addition, it offers a high level of consistency between assessors. The method's high reproducibility and reliability have been confirmed in numerous scientific studies [6, 7, 13].

Conclusions

The results of the study showed that in the 10-year-old patients examined at the Orthodontics Clinic at the Military Specialist Outpatient Clinic in Poznań, the development stages of third molars were similar to those reported in the subject literature. However, in nearly one in four patients no signs of the third molar germs were found in the pantomographic images.

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"The Miraculous Rescue" – Dubno, 27 September 1939

Cudowne ocalenie" – Dubno, 27 września 1939 r.

Dalibor Marcin Malinowski

Abstract The paper presents the so far publicly unknown circumstances behind the release of a group of 20 Polish military physicians, including 3 career officers, by the Soviet authorities of the Dubno garrison. These physicians were captured as prisoners of war by the Soviet forces after the Soviet Union's invasion of Poland on 17 September 1939. One of the released physicians was Lt. Col. Adolf Malinowski, MD (1891-1962), the scientific head of the Psychiatric Ward of the CWSan School Hospital in Warsaw, mobilized on 1 September 1939 with assignment to the position of the commander of the 91st Advanced Evacuation Hospital in Brest-on-the-Bug. The presentation is based on a written report of this officer-physician (the author's grandfather) on his participation in the defensive war of 1939, a story told by his wife Wacława Malinowska née Tyszkiewicz (1901-1976), a nurse in this hospital, and memories of Adolf Władysław Malinowski (1926-1990) – the author's father, who as a boy of 13 at that time was with his parents. The causative role played in that wartime episode by Wacława Malinowska was described. The author (born in 1956) is the last living witness of the stories told by the participants of that "miraculous rescue" of 27 September 1939 in Dubno supported his testimony with original documents from the family archive.

Keywords: defensive war of 1939, history of military medicine

Streszczenie W pracy przedstawiono nieupubliczniane dotychczas okoliczności uwolnienia przez sowieckie władze Garnizonu Dubno grupy 20 polskich lekarzy wojskowych, w tym 3 zawodowych oficerów, którzy po napaści 17 września 1939 r. ZSRR na Polskę trafili do radzieckiej niewoli. Jednym z uwolnionych lekarzy był ppłk lek. Adolf Malinowski (1891-1962), kierownik naukowy Oddziału Psychiatrycznego Szpitala Szkolnego CWSan w Warszawie, zmobilizowany 1 września 1939 r. z przydziałem na stanowisko komendanta 91. Wysuniętego Szpitala Ewakuacyjnego w Brześciu n. Bugiem. Prezentację oparto na pisemnym sprawozdaniu tego oficera-lekarza (prywatnie dziadka autora artykułu) z udziału w wojnie obronnej 1939 r., relacji jego żony Wacławy Malinowskiej z Tyszkiewiczów (1901-1976), pielęgniarki w tym szpitalu, oraz relacji Adolfa Władysława Malinowskiego (1926-1990), ojca autora, który jako 13-latek przebywał w tym czasie z rodzicami. Opisano sprawczą rolę, jaką w tym epizodzie wojennym odegrała Wacława Malinowska. Autor (ur. 1956 r.), będący ostatnim żyjącym świadkiem relacji uczestników owego „cudownego ocalenia” 27 września 1939 r. w Dubnie, swoje zeznanie poparł oryginalnymi dokumentami z archiwum rodzinnego.

Słowa kluczowe: historia medycyny wojskowej, wojna obronna 1939 r.

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This article presents the extraordinary circumstances of releasing a group of 20 Polish military physicians, captured as prisoners of war by the Soviet forces after the Soviet Union's invasion of Poland on 17 September 1939, by the Soviet authorities of the Dubno garrison. One of the physicians was my grandfather, at the time Lt. Col. Adolf Malinowski, MD (1891-1962), a psychiatrist and neurologist, scientific head of the Psychiatry Department at the Teaching Hospital of the Centre for Sanitary Education (CWSan) in Warsaw (05/1934-1/09/1939), called up for military service on 1 September 1939 as the Commandant of Evacuation Hospital No. 91 in Brześć-on-

Bug (Fig. 1) [1]. Therefore, my grandfather's biographer, Col. Prof. Stanisław Ilnicki, asked me, as the last living witness of the accounts of the people involved in these events, to complete and document the information he had received in 1988 from my father, Adolf Władysław Malinowski (1926-1990) [2].

My knowledge on this topic is based on five sources: (1) a one-page account of my grandfather regarding his participation in the defence war in 1939, a copy of which I enclose [3] (Fig. 2), (2) documents confirming the facts presented in the account, (3) an oral account of my grandmother, Wacława Malinowska (1901-1976), a nurse



Rycina 1. Ppłk lek. Adolf Malinowski z żoną Wacławą na tle domu w Warszawie przy ul. Królewskiej 2, ok. 1937 r.

Figure 1. Lt. Col Adolf Malinowski, MD, with his wife Wacława by the house at 2 Królewska Street in Warsaw, circa 1937

in the military hospital where my grandfather was the commandant, (4) an account of my father, who, as a 13-year-old boy, accompanied his parents in their war-time journey and (5) the analysis of the available publications on this subject.

Col. Adolf Malinowski MD, PhD, who after the war was the commandant of the 3rd Military District Hospital in Kraków (09/1945 – 10/1946) and the 6th Military District Hospital in Gdańsk Oliwa (10/1946 - 03/1947), mentioned

these events in the following part of his account "(...) On 17 September in Dubno I learned that the Red Army had crossed our border. We were stationed in the village of Malowana near Dubno (a colony of Czechs). On 18 September we were interned by the Soviet Army and placed in the barracks in Dubno. The day before I had released the officers, offering them cars to use (they left towards Lviv), and only physicians remained, relying on the international warranties of the Red Cross. However,

Opis

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psychiatrycznego szpitala
szkolnego CWSan w Warszawie

Po ogłoszeniu mobilizacji 1.IX.39 zostałem oddział pik.-lek. w st. sp. Janowi Nelkenowi. Otrzymałem skierowanie do Brześcia n/B. ze stawieniem się w VI dniu MOB. Wobec przerwania komunikacji kolejowej zostałem skierowany do Brześcia przysiężnym autem ciężarowym. Zostałem wyznaczony na komendanta wysuniętego szpitala ewakuacyjnego Nr 91, który miał być rozwinęty w budynku szkoły handlowej w Brześciu. Szkoła ta była już zbombardowana i zrujnowana. Wyznaczono mi wtedy miejsce na formowanie szpitala we wsi Małaszewice odległej o 10 km. od Brześcia. Wys. szpital ewakuacyjny na 500 łóżek miał przewidzianą jedynie trakcję końową, żadnego samochodu. W ciągu paru dni zgłaszali się lekarze /około 25/, pielęgniarki / 20/, personel szpitala /kwatermistrz, aptekarz, kapelan itd./, szeregowi, konie, wozy, sprowadzono sprzęt sanitarny i gospodarczy. Stan koni i wozów był niezadawalający: konie szły do podkucia, wozy i sprzęt do reperacji. Niemcy jednak podchodzili już pod Brześć, byli o jakieś 10-15 km. od naszej wioski. 11.IX. otrzymałem rozkaz ewakuacji w kierunku Kowla. Trakt brzeski pod stałymi nalotami samolotowymi uniemożliwił wyruszenie "natychmiast", zwlekłem do zbroju, rozpostrując się w prowiant i zdobywając sanitarkę /auto/ i samochód osobowy. Przed wieczorem otrzymałem rozkaz, by zabrać ze sobą wszystkie jednostki wojskowe kwaterujące w tej wiosce, tworzyło to grupę żołnierzy 250-300 osób. Jechaliśmy do Kowla nocami, w dzień kryjąc się po lasach. W Kowlu skierowano nas na Tarnopol jako punkt zbiorczy dla jednostek sanitarnych. W dniu 17.IX. w Dubnie dowiedziałem się o przekroczeniu granicy przez Armię Czerwoną. Kwaterowaliśmy wówczas we wsi Kulowana pod Dubnem /kolonizacji czeskiej/. W dniu 18.IX. zostaliśmy internowani przez wojsko radzieckie, umieszczono nas w koszarach w Dubnie. W przeddzień zwolniliśmy oficerów oddając do ich dyspozycji samochody /udawali się na własną rękę w kierunku Lwowa/, pozostali tylko lekarze licząc na międzynarodowe gwarancje Czerwonego Krzyża. Traktowano nas jednak jako jeńców wojennych, mieliśmy wkrotnie odjechać na teren ZSRR /szeregowych przeważnie zwalniano do domu/. Dzięki staraniom mojej żony /pielęgniarki mego szpitala/ Komenda Garnizonu m. Dubna w dniu 27.IX.39. zwolniła naszą grupę lekarzy na wolność polecając powrócić nam do wczajnych zajęć zawodowych lekarskich /na terenie okupowanym/. 20 lekarzy, w tym 3 wojskowych zawodowych, wyjechałem do Lwowa, byłem przez miesiąc wolonteriuszem w szpitalu psychiatrycznym w Kulparkowie. W początku listopada 1939r. przekroczyłem "zieloną granicę" pod Mawą Ruską i wróciłem do Warszawy. Wys. szpital ewakuacyjny Nr 91 w stanie mob. nie rozwinął się, ewakuację odbyliśmy bez strat, chociaż w drodze byliśmy parokrotnie bombardowani /zdradzały nas dymiące kuchnie polowe w lesie/. Nie wiem nic o innych jednostkach sanitarnych z tego okresu, odezwały one z Brześcia wcześniej przede mną. Tę np., że w Brześciu formował się szpital ewak. Nr 91, komendantem którego był wyznaczony pik.-lek. Jan Garbowski, b.komendant szpitala szkolnego CWSan /zginął w Katyniu/.

X/oprócz mnie,
mjr. Adam Kiełbiński, chirurg /ob. w Anglii/
kpt Kornel Mikulewicz, internista /ob. w Słupsku/

Adolf Malinowski

Figure 2. Copy of report by Col. (ret.) Adolf Malinowski, MD, PhD, on his participation in the defensive war of 1939

Rycina 2. Kopia sprawozdania pik. w st. spocz. dr. med. Adolfa Malinowskiego o jego udziale w wojnie obronnej 1939 r.

we were considered prisoners of war, and we were to be taken soon to the Soviet Union (private soldiers were mostly released). Thanks to the efforts of my wife (a nurse in my hospital), on 27 September 1939, the Dubno garrison authorities released our group of physicians, recommending that we return to our medical professional

tasks in the occupied area (20 physicians, including 3 professional soldiers: me, Maj. Adam Kiełbiński, a surgeon (currently in England) and Capt. Kornel Mikulewicz, an internist (currently in Słupsk)" [3].

My grandfather died when I was 6 years old, and I do not remember his reminiscences of the war period.

However, I recall exactly the stories of my grandmother, Wacława, with whom I lived since my birth, as well as with my parents, in our house in Sopot at 18 Ogrodowa St., flat 4. Also after my grandfather's death, when she left that flat, until her death in 1976, we were in daily contact. As both my parents were musicians and often travelled, they decided I would not go to the kindergarten, but my grandmothers would take care of me. Grandma Wacława had a very good memory and great storytelling skills. My father, who - as I mentioned - spend the entire time of war with his parents, completed her stories with details he witnessed.

Before I move to their account of the events that took place on 27 September 1939 in Dubno, I must present certain facts from my grandmother's life that significantly increased the effectiveness of her efforts to have her husband and the other 19 military physicians released.

Wacława Malinowska came from the Tyszkiewicz family, who lived in today's Ukraine. The family had land in the Żytomierz area. My grandmother's father, Marian Tyszkiewicz, was a worker, building railways. He worked on the Northern-Caucasian Iron Road. The family lived in a train carriage, which contained a briefing room and office rooms, as well as the living area. Therefore, the places of birth of my grandmother and her siblings differed, depending on which station the works were conducted on at a given time. The place of birth of my grandmother was "Stacja Kavkazskaja". It was the first railway station built in the area of today's Rostov-on Don.

During World War I, my grandmother attended a secondary school in Rostov, then started Law Courses for Women at the Warsaw University evacuated to Rostov. In Rostov, she witnessed the tragic fights between the anti-Bolshevik White Russians and Bolsheviks, and experienced the hunger prevailing in Ukraine at that time. Together with her younger sister, Janina and a friend, Wanda Zacharewicz, she started a long journey to Poland, partially on foot. They managed to reach the Polish border and cross it illegally. They arrived at Sarny. There my grandmother met her future husband, Maj. Maj. Adolf Malinowski, MD, senior head on the Nervous Diseases Ward, at the Vilnius Fortified District Hospital, whom she married in 1926. In the same year their son, my father, Adolf Władysław was born. In 1933, my grandfather was promoted to lieutenant colonel, and in 1934 he became the head of the Psychiatry Department of the Teaching Hospital of the Centre for Sanitary Education in Warsaw. In May of 1934, the Malinowsky family moved to the capital city. Initially, they lived at 14 Trzeciego Maja Avenue, and then in 1937 they moved to the so-called House Without Corners at 2 Królewska Street (Fig. 1) [4]. The war journey of Lt. Col. Adolf Malinowski and his family in September 1939 was

presented in the account quoted above and in other documents (Fig. 3, 4) [3].

Constant German air raids and bombings prevented the development of Evacuation Hospital No. 91 in mobilisation. The news that on 17 September 1939 the Red Army had crossed the Polish border reached the members of the hospital at Malowana, a village near Dubno, where Czech settlers lived [5].

Before the Soviet troops arrived in the village, Ukrainian nationalists came and demanded that Polish soldiers be given over. However, according to my grandmother, the Czech settlers, who had their own armed vigilante group, refused: "if they want, they may murder Poles on their own land, but in our village it will not happen". After the Russians arrived, and columns of war prisoners were escorted to Dubno. My grandmother asked one of the guards - in Russian, of course: "Szto wy budietie s nimi dielat?" ("What are you going to do with them?"). The guard smiled at my grandmother and asked: "A twoj to katoryj?" ("Which one is yours?"). Grandma pointed at my grandfather. The Russian soldier laughed and said: "Tvoj takoj tolstyj z nievo sasiski dielat budiem" ("Yours is so fat, we will turn him into sausages").

After their arrival in Dubno, my grandfather and the other officers were interned in the barracks. My grandmother with my father and several wives of other interned soldiers, rented a place near the barracks. At night, shots were heard from the barracks, which the women interpreted as executions. I know from my father how stressful the situation was for my grandmother. She went to sleep as a brunette. Woken at night by the gunshots, suspecting her husband had been executed, she suddenly turned grey. In the morning everyone was surprised to see a grey-haired lady.

From my grandmother's accounts I know that carriages were being prepared to take the prisoners to Russia. My grandfather said that they were taken into the carriages. However, the railway engine never arrived. This was believed to be the action of Polish railway employees, but this interpretation has not been confirmed by other sources.

Here comes the most important piece of information in this story, unknown to the other people involved in the events. My grandmother, who was - one might say today - a very feisty woman, went to the commander of the Soviet garrison in Dubno. She took her son with her. Despite various obstacles, she was let into the barracks, and after a while she met with the NKVD (People's Commissariat for Internal Affairs) major. Grandmother said that after she had entered his office, the man ignored her ostentatiously. He was writing at his desk, giving orders to his charges, making telephone calls and not paying any attention to my grandmother. As she was

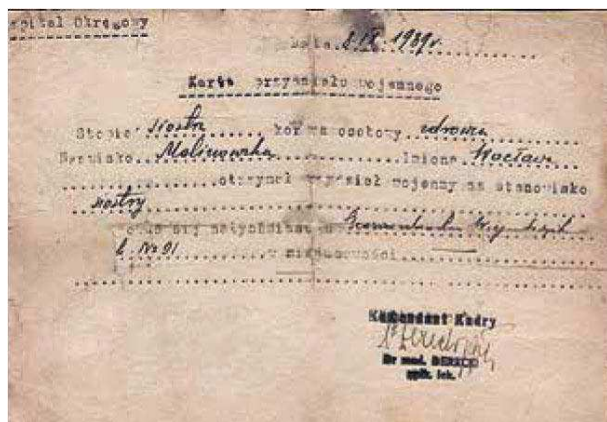


Figure 3. Copy of Waclawa Malinowska's wartime assignment to the post of nurse of Evacuation Hospital No. 91, dated 8 September 1939
Rycina 3. Kopia przydziału wojennego Waclawy Malinowskiej na stanowisko pielęgniarki Szpitala Ewakuacyjnego Nr 91 z 8.09.1939 r.



Figure 5. Copy of document dated 3 October 1939, recognizing Adolf Malinowski as a war refugee

Rycina 5. Kopia dokumentu uznającego Adolfa Malinowskiego za uchodźcę wojennego z 3.10.1939 r.

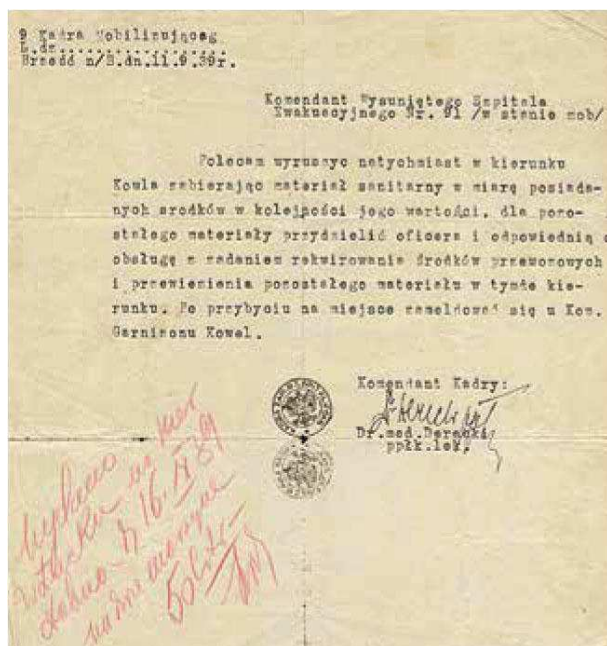


Figure 4. Order of the Reserve Cadre Commander of the 9th Area Hospital in Brest-on-the-Bug, dated 11 September 1939.

Rycina 4. Polecenie komendanta Kadry Zapasowej 9. Szpitala Okręgowego w Brześciu n. Bugiem z 11.09.1939 r.



Figure 6. Copy of a document dated 3 October 1939, recognizing Waclawa Malinowski as a war refugee

Rycina 6. Kopia dokumentu uznającego Waclawę Malinowską za uchodźcę wojennego z 3.10.1939 r.

fluent in Russian, she asked the officer to release her husband – a doctor, because she was alone with her child and what would she do if her husband were sent away. After a while, as she recounted, the man “threw” a very nasty word at her. However, the swear word was not in Russian, but in one of Caucasian dialects that my grandmother happened to know. As long as my grandmother lived, I never mustered the courage - which

I regret until today - to ask her what was the word, and in what language. Having recognised it, my grandmother immediately started addressing the officer in this language. He turned to her at once, leaving his “tasks”, and asked: “How do you know my language?”. And grandmother started telling him the story of her life. It turned out that they were born in the same area. Later on it appeared that they had common acquaintances, and as her story progressed, my grandmother made the officer believe that she was telling the truth. The result of this conversation was what people later called “serendipity” or something similar [6]. After the meeting, the major demanded that my grandfather be brought and he issued that extraordinary decision, as far as Polish prisoners of war held captive by the Soviet Army in September 1939



Figure 7. Certificate on Dr. Adolf Malinowski's employment as a volunteer at the Mental Institution in Kulparków, dated 7 October 1939.

Rycina 7. Poświadczenie o pracy dr. Adolfa Malinowskiego w charakterze wolontariusza w Zakładzie dla Umysłowo Chorych w Kulparkowie z 7.10.1939 r.



Figure 8. Bill issued by the Mental Institution in Kulparków, dated 4 November 1939

Rycina 8. Kwit z Zakładu dla Umysłowo Chorych w Kulparkowie z 4.11.1939 r.

were concerned, to release the 20 military physicians. I enclose copies of the documents that allowed my grandparents and my father, now considered war refugees (bieżeńcy), to travel by train to Lviv and then to Warsaw (Fig. 5, 6).

Having released the physicians, the major saw my grandparents and my father to the gate of the barracks, where motorcycles with passenger side-cars were parked. He placed my father in one of the side-cars. My father told me that he had been terrified. The major,

wearing his uniform, sat on the motorcycle and, going as slowly as possible, did three laps around the market. He parked the motorcycle at the barracks, took my father out of the side-car, said goodbye to my grandparents, saluting, and returned to the barracks. My grandmother always believed that it was supposed to show the citizens of the town who were at the market that these people were not to be attacked, but at least tolerated.

Thanks to the documents – the passes they received, dated 3 October 1939, my grandparents reached Lviv.



Figure 9. Police certificate on Dr. Adolf Malinowski's apartment damage resulting from war operations in September 1939

Rycina 9. Policyjne zaświadczenie o uszkodzeniu mieszkania dr. Adolfa Malinowskiego wskutek działań wojennych we wrześniu 1939 r.

Based on the preserved documents, during their stay in this town, from 7 October to 7 November 1939, my grandfather was a volunteer at the former National Institute for Mentally Ill Patients in Lviv, commonly known as Kulparkow, which was the name of the part of the city where the Institute was located 7, 8) [7].

I believe that their understanding of the "Bolshevik system" and what they had seen during the September campaign made them return to Warsaw in the General Government area. They returned through the town of Rawa-Ruska. In the documents illustrating their journey from Dubno, there is a stamp from Lublin railway station dated 6 November 1939 (Fig. 5, 6). They arrived in Warsaw safely, but they could not return to their flat. Based on a police report from 11 November 1939, "flat no.44 at 2 Królewska Street where Dr Adolf Malinowski used to live has been partially damaged during the war operations and cannot be entered, as the staircase is ruined and the only entry is a hole in the wall from flat no. 35. The furniture in flat 44 has been partially destroyed". And what was left - was stolen. Moreover, this part of Warsaw was designed to be Deutsche Wohnen Gebiet, i.e. the German Residential Area.

My grandparents and their son moved to 4 Dynasy Street, flat 10. My grandfather started work at the Ujazdowski Hospital, which during the war operated under the auspices of the Red Cross. His work at that time, as well as his whole professional life, is described by Prof. Stanisław Ilnicki in another article in this issue of *Military Physician* [8].

My father, Adolf Władysław, despite his young age, engaged in resistance activities. Initially in the National Military Organisation (no. 1858), then in the Home Army. Despite the great risk, he used the Gestetner copying

machine in the hospital to print a textbook for the resistance. But that is a different story [9].

Returning to the main subject of this article, my grandmother's actions, which resulted in a surprising reaction of the NKVD major whose name we do not know, helped to save, at least at that stage, twenty Polish doctors, including three professional military physicians. My grandfather and Lt. Col. Kornel Mikulewicz MD, PhD [10] left a mark in the history of military medical service in Poland during the war, as well as afterwards. Lt. Col. Adam Kielbiński MD, PhD, after a dramatic experience in Russian forced labour camps, continued service as a surgeon in Anders' Army and after the war, until his return to Poland in 1969, he worked in the demilitarised 3rd War Hospital in Penley (Wales), where former Polish soldiers and their families were treated [6, 11].

The "miraculous rescue" of 20 military physicians in Dubno on 27 September 1939, according to my knowledge, apart from the short reference in my grandfather's account quoted above, has not been mentioned in the documents and scientific studies to which I have had access. I believe that Maj. Kielbiński's account of his individual release as a result of "great luck" might result from his fragmentary knowledge of the circumstances behind this event. The evacuation hospital was a military hospital, and the NKVD must have been aware of that. The term "miraculous rescue" in the title of this article has been used on purpose. When I was a child, in my grandparent's house, I often listened to a Polish Radio programme entitled, if memory serves, "Skrzynka poszukiwań PCK" (Polish Red Cross Box of the Missing). A speaker read the first names and surnames of people considered missing. He mentioned dates of birth, information about families, and the presentations often ended with the words "last seen", followed by the place

and date. My closest family circle included a group of several military professionals and state officers who were murdered and lost without a trace in the East. Their history is presented in a book I co-authored [4]. I would like to dedicate this article to my grandparents, Col. Adolf Malinowski MD, PhD and Wacława Malinowska née Tyszkiewicz, and to my father, Adolf Władysław – the heroes of this story.

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Col. Adolf Malinowski (1891–1962)

MD, PhD, a meritorious Polish military and forensic psychiatrist

Płk dr med. Adolf Malinowski (1891-1962),
zasłużony polski psychiatra wojskowy i sądowy

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Abstract The paper describes the life and achievements of Col. Adolf Malinowski MD, PhD (1891-1962) in the area of military and forensic psychiatry. Doctor Malinowski's ancestry, school years and studies at the Imperial Military Medical Academy in St. Petersburg (1910-1914), his service as a regimental physician in the Russian Army during WW1 (1914-1918) and then in the Polish I Corps (1918) as well as his civilian career after demobilisation (1918-1920) are all discussed. The work describes Dr Malinowski's service in the Polish Armed Forces: during the Polish-Soviet War of 1920, his work in the Vilnius Fortified Area Hospital (1922-1934), the CWSan Teaching Hospital in Warsaw (1934-1939) and during the defensive war of 1939. His work at Ujazdowski Hospital during the German occupation of Poland (1939-1944) and during the Warsaw Uprising of 1944 is also described. Also Col. Malinowski's military service after WW2 is described as well as his scientific and lecturer's work in the Psychiatry Teaching Hospital of the Gdańsk Academy of Medicine (1947-1954) after his discharge from the service. A list of his scientific works and selected excerpts from them are presented. The paper also quotes the opinions of his superiors, collaborators and colleagues that characterize Dr Malinowski as a person, and his ethos as a physician and officer of the Polish Armed Forces.

Key words: forensic psychiatry, history of Polish military medicine, military psychiatry

Streszczenie Tematem pracy są życie i dokonania płk. dr. med. Adolfa Malinowskiego (1891-1962) w dziedzinie psychiatrii wojskowej i sądowej. Omówiono jego rodowód, przebieg nauki szkolnej i studiów w Cesarskiej Wojskowo-Medycznej Akademii (VMA) w Petersburgu (1910-1914), służbę lekarza pułkowego w armii rosyjskiej podczas I wojny światowej (1914-1918) i w I Korpusie Polskim (1918) oraz pracę cywilną po demobilizacji (1918-1920). Przedstawiono przebieg służby w Wojsku Polskim: w wojnie polsko-bolszewickiej 1920 r., w Szpitalu Obszaru Warownego Wilno (1922-1934), Szpitalu Szkolnym CWSan. w Warszawie (1934-1939) oraz w wojnie obronnej 1939 r. Scharakteryzowano jego pracę w Szpitalu Ujazdowskim w okresie okupacji niemieckiej i podczas powstania warszawskiego (1939-1944). Opisano również przebieg służby wojskowej płk. A. Malinowskiego po II wojnie światowej oraz pracę naukowo-dydaktyczną w Klinice Psychiatrycznej Akademii Medycznej w Gdańsku (1947-1954), po zwolnieniu z wojska. Przedstawiono spis jego publikacji naukowych i wybrane z nich cytaty. Przytoczono opinie przełożonych, współpracowników i kolegów, charakteryzujące osobę dr. med. A. Malinowskiego oraz jego etos jako lekarza i oficera WP.

Słowa kluczowe: historia polskiej medycyny wojskowej, psychiatria wojskowa, psychiatria sądowa

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The 100th anniversary of psychiatry in the Polish Army (1920-2020) is a good opportunity to remember Col. Adolf Malinowski MD, PhD (1891-1962), a co-founder of Polish military psychiatry and promoter of its modern model,

adequate for the tasks and potential of military health care. It is also a good opportunity to present his achievements in forensic psychiatric adjudication.

Adolf Malinowski was born on 16 December 1891 in Walk (today Valka, a town on the border of Latvia and Estonia), as the oldest of four children of Marcin Malinowski and Adela née Zakrzewska. The Malinowski family, with gentry and bourgeois roots, were resettled from Vilnius to the Lifland Governorate as a consequence of the Uprising of 1863. At the beginning of the 20th century, they were allowed to live in Saint Petersburg, where the father of the family, a talented wood-carver, found a job on the railway (Fig. 1) [1-5].

In Saint Petersburg Adolf Malinowski spent his childhood and adolescence. He went to a Polish school run by the St. Stanislaus Church, then to St. Catherine's school and to an eight-grade state secondary school from which he graduated in 1910 with a gold medal. In the same year he began medical studies at the Imperial Military Medical Academy, from which he graduated on 29 November 1914 with a *medicus cum eximia laude* distinction, having received a "very satisfactory" grade in 17 exams and a "satisfactory" grade in one exam [1-5]. Malinowski received a medical doctor's diploma on 30 July 1915, as after his final exams, on 7 December 1914, he was called to military service and sent to the Southwestern Front of the Great War, which began on 27 July 1914. As a physician (without a rank) he served in the 165th Łucki Infantry Regiment (Rol), 166th Równieński Rol, 671st Radzyński Rol and 2nd Hospital of the 42nd Infantry Division. For his service he received combat medals: Order of St. Anne 4th class (for courage), 3rd class with swords, and Orders of St. Stanislaus 3rd class and 2nd class with swords. 2) [1-5].

On 19 February 1918, Dr Malinowski was captured by the Germans. Released on 6 May 1918, he joined the 1st Polish Corps (1KP) led by Gen. Józef Dowbor-Muśnicki. Until the Corps was dissolved on 11 June 1918, Malinowski served as a captain in the isolation-monitoring point of the main arm of the 1KP in Bobrujsk. After demobilisation, Malinowski worked with the Polish Red Cross in Minsk as the head physician at the Sanitary Department for Polish refugees in Łoszyca (14/05 - 1/12/1918), then at the staging point in Siedlce (11/12/1918 - 1/08/1919) and as the head physician at the district epidemiological hospital in Stok Lacki (2/08/1919 - 20/07/1920), "working with utmost devotion, passion, diligence and demonstrating a high level of professionalism, both as a doctor and administrator" [1].

In response to the call by the National Defence Council to defend his country's independence, on 24 July 1920, Dr Malinowski joined the Polish Army as a volunteer. With the rank of captain he served as Head of the Military Hospital in Poznań (26/07 - 18/12/1920), then Senior Head of the Department of Infectious Diseases at Stage Hospital No. 31 in Grodno (24/12/1920 - 30/12/1921), where "selflessly and effectively he fought



Figure 1. Adolf Malinowski, student of the VMA in St. Petersburg (first from right) with his parents and siblings, circa 1912

Rycina 1. Adolf Malinowski, słuchacz VMA w Petersburgu (pierwszy z prawej) z rodzicami i rodzeństwem, ok. 1912 r.

the epidemic of typhus and relapsing fever, developing the diseases himself" [1]. After his convalescence, he became the hygiene clerk at the Sanitary Chief's Office of the 2nd Army in Lida (31/12/1921 - 5/05/1922).

Despite the declared plan to take off the uniform, he stayed in the army after the war. This decision was prompted by his appointment on 7/05/1922 as acting head of the Ward of Nervous Diseases at the Vilnius Fortified District Hospital at Antokol Malinowski started this position after completing a 12-week course in military medicine at the Application School of the Medical Officers Corps and passing a theoretical and practical exam on 15 September 1922, with very good results [1, 5].

Capt. Adolph Malinowski MD created the Military Ward of Nervous Diseases at Antokol from the beginning. The ward had 50 beds, including 20 for psychiatric patients, and it addressed the needs of two headquarters of the District Corps: 3rd Headquarters of District Corps Grodno and 9th Headquarters of District Corps Brześć-on-Bug. The ward was run on the following "principles of the most advanced and humanitarian treatment of mentally ill



Figure 2. Dr Adolf Malinowski - *cum eximia laude* graduate of the VMA of St. Petersburg, 1914

Rycina 2. Dr Adolf Malinowski - absolwent *cum eximia laude* VMA w Petersburgu, 1914 r.



Figure 3. Maj. Adolf Malinowski, MD, head of the Mental Diseases Ward of the Vilnius Fortified Area Hospital, 1924

Rycina 3. Mjr lek. Adolf Malinowski, st. ordynator Oddziału Chorób Nerwowych Szpitala Obszaru Warownego Wilno, 1924 r.



Figure 4. Maj. Adolf Malinowski, MD, with his wife Wacława, 1926

Rycina 4. Mjr lek. Adolf Malinowski z żoną Wacławą, 1926 r.

Hygiene Institute of the Stefan Batory University (1930-1932) patients and promoting the latest trends in this field" (Fig. 3) [1.6].

On 19 March 1925, Capt. Adolf Malinowski received the rank of Major [1]. On 14 February 1926 he married 25-year-old Wacława Tyszkiewiczówna, whom he "charmed while dancing at the carnival ball in Sarny". Time showed that he chose his wife perfectly, as she lived by the words *ubi tu Gaius, ibi ego Gaia*. On 17 December 1926, their only son, Adolf Władysław, was born (Fig. 4) [5, 7].

In the years 1923-1927, the Military Ward of Neuroses and Mental Diseases at Antokol was the location of the Stefan Batory Psychiatric Department, which did not have its own location at that time. Dr Malinowski combined the position of Senior Head of the Military Ward with the role of Senior Assistant at the Psychiatric Department. His superiors were leading Polish psychiatrists: Prof. Antoni Mikulski (1923-1925) and Prof. Rafał Radziwiłłowicz (1925-1927) [6]. Malinowski also worked as assistant at the Hygiene Institute of the Stefan Batory University (1930-1932), in Social Security Agency and in the Department of Infections and Surgery at the District Office in Vilnius (1930-1934). He was also active as forensic medical expert (from 1926) [3-4]. In the summer of 1929, for three months he was a Commandant of the Branch of



Figure 5. Marshal Józef Piłsudski's visit to the Branch of the 3rd Area Hospital in Druskienniki, temporarily managed by Maj. Adolf Malinowski, MD, 1929

Rycina 5. Wizyta marszałka Józefa Piłsudskiego w Filii 3. Szpitala Okręgowego w Druskiennikach, kierowanej czasowo przez mjr. lek. Adolfa Malinowskiego, 1929 r.

the 3rd District Hospital in Druskienniki. He hosted the visit of Józef Piłsudski, who often went to that spa town at the time (Fig. 5) [8].

On 1 January 1933, Maj. Malinowski MD was promoted to lieutenant colonel. In the annual classification list reports he was described by his superiors, Col. Szczepan Ordylowski MD, Col. Wacław Szreders MD and Col. Mikołaj Werakso MD as "an energetic, independent and hard-working officer, effective administrator, good lecturer, demonstrating self-control, strong integrity, outstanding initiative and extraordinary speaking skills. He shows kindness to soldiers and takes good care of them. Apart from his professional duties, he is interested in social affairs and science. He shows a lot of promise. General value for the service - outstanding. Close attention should be paid to this officer" [1].

In the 12 years of his service at the Military Hospital in Vilnius, Dr Malinowski actively participated in the meetings of the Sanitary Section of the Military Science Society [9-10], and he published 10 studies and scientific reports, mostly case reports in neurology and psychiatry [11-16].

Due to this personal qualities and organisational and scientific achievements, on 23 April 1934, Lt. Col. Malinowski was appointed the Scientific Head of the 2nd Psychiatry Department at the Teaching Hospital of the Centre for Sanitary Education (CWSan.) in Warsaw. On 8 May 1934, he took over from the retiring legend of Polish psychiatry, Col. Jan Nelken MD, PhD (1878-1940), (Fig. 6) [1].



Figure 6. Farewell meeting of Lt. Col. Adolf Malinowski, MD (in the centre of the photo), with the Wilno Fortified Area Hospital staff, 1934

Rycina 6. Pożegnanie pplk. lek. Adolfa Malinowskiego (w centrum fotografii) z załogą Szpitala Obszaru Warownego Wilno, 1934 r.



Figure 7. Lt. Col. Adolf Malinowski, MD, in his office at 2 Królewska Street in Warsaw, circa 1937

Rycina 7. Płk lek. Adolf Malinowski w gabinecie przy ul. Królewskiej 2 w Warszawie, ok. 1937 r.



Figure 8. Lt. Col. Adolf Malinowski, MD, with medical personnel among patients of the Psychiatric Ward of the CWSan School Hospital in Warsaw, circa 1937

Rycina 8. Płk lek. Adolf Malinowski z personelem medycznym wśród pacjentów Oddziału Psychiatrycznego Szpitala Szkolnego CWSan. w Warszawie, ok. 1937 r.

The years in the Centre for Sanitary Education, located at the Ujazdowski Hospital were the most scientifically prolific period in Dr Malinowski's life. In the years 1935-1938, he published 12 articles in *Military Physician*, discussing the organisation of psychiatry during times of war and peace, forensic psychiatric selection and expert reports regarding soldiers, epidemiology of mental disorders in a military environment and psychiatric care over retired military personnel [17-28]. In 1938, he published in this journal a study on nocturnal urinary incontinence in soldiers, based on the materials he had been collecting since 1921 [9] The study was intended as a doctoral dissertation, but he did not manage to defend it before the war (Fig. 7) [29].

New superiors at the Centre for Sanitary Education, Gen. Jan Kołłątaj-Srzednicki and Col. Jan Garbowski, held Lt. Col. Malinowski in as high a regard as those in Vilnius: "Bright, critical. Resilient, an energetic administrator. Demonstrates strong integrity. Cheerful and controlled. Treats patients with kindness and diligence. Good lecturer. An outstanding neurologist and psychiatrist. His expertise is highly valued in courts. Shows a love of his specialisation, which he treats as a social problem. A man of unique management skills. He could be a good hospital commandant during war." In appreciation of his virtues, Malinowski was awarded the following: Gold Cross of Merit (19/03/1937), Medal for the 1918-1921 War, Medal for Long Service and Medal of Regained Independence [1].

Szpital Okręgowy

Data... 8. IX. 1939r.

Karta przydziału wojennego

Stopień... *pptk. lek.*... korpus osobowy... *zdrowia*

Nazwisko... *Dr. Malinowski*... Imię... *Adolf*

... otrzymał przydział wojenny na stanowisko
Komandanta Wysz. Szpital. Brak. Nr 91

Zameldował się natychmiast u ...
... w miejscowości...

Oficer Mobilizacyjny
[Signature]
UZEL JOZEF
kpt. adm.

Figure 9. Wartime assignment of Lt. Col. Adolf Malinowski, MD, dated 8 September 1939

Rycina 9. Przydział wojenny ppłk. lek. Adolfa Malinowskiego z 8.09.1939 r.

On 1 September 1939, Lt. Col. Malinowski passed the management of the Psychiatry Department to the recalled for service Ret. Col. Jan Nelkem MD, PhD, and following the military assignment, he went with his wife and 13-year-old son to Brześć-on-Bug in order to become the Commandant of Evacuation Hospital No. 91 on 8 September 1939. I will not present this mission, as it is described in detail in the article by Dalibor Malinowski in this issue of *Military Physician* (Fig. 9) [7].

After his return to Warsaw on 11 November 1939, Dr Malinowski went to the Ujazdowski Hospital, which was a war hospital (from 31/03/1940 it was a hospital of the Polish Red Cross). Having completed the registration formalities in Gesundheitskammer (Fig. 10), Malinowski was hired as Senior Head - neurologist [2, 4].

Since his flat at 2 Królewska Street had been bombed in September 1939, he moved with his family to a house at 4 Dynasy Street. In February 1943, he received permission to live at the Ujazdowski Hospital, in the Psychiatry building (45 Górnośląska St., building no. 10) and to open an office for the treatment of neuroses. The hospital commandant also appointed him the Chair of the Military Medical Commission, where the committee's tasks included "comprehensive examination and detailed description of injuries or diseases, their effect on earning capacity and their relation with the military service." The disability certificates issued by the commission, adjudicated by a German physician, allowed the patient to receive treatment in the outpatient facility of Ujazdowski Hospital and to enjoy certain privileges in everyday life, e.g. to move relatively safely around the city, and, initially, even to leave the ghetto [30].

Dr Malinowski was not directly involved in the resistance, but as the chair of the Medical Commission, he often supported members of this movement [4, 30]. However, his son, 18-year-old Corporal Cadet Adolf Władysław, took an active part in the resistance: first in the National Military Organisation, then in the Home Army, under the alias of "Aldy" [4, 5, 31].

After the outbreak of the Warsaw Uprising, on 1 August 1944, the Commandant of the Ujazdowski Hospital of the Polish Red Cross, Prof. Tadeusz Kucharski, entrusted his deputy, Dr Malinowski, with additional duties. Malinowski held this function during the dramatic evacuation of the hospital to the institution run by the Sisters of Divine Providence at 19 Chełmska Street, during massive air raids on the hospital, resulting in multiple injuries among the patients and the personnel, as well as - after the failure of the uprising - for two more months in Milanówek until the hospital was evacuated on 8 November 1944 to Kraków.

In the Ujazdowski hospital of the Polish Red Cross in Kraków, located in St. Lazarus Hospital at 26 Kopernika Street, Malinowski held the position of Senior Head of the Neurological Department (09/11/1944 – 21/03/1945). After he was called to the army on 22 March 1945, Lt. Col. Malinowski served at District Hospital No. 3 in Kraków in the following positions: Head of the Neurological Department (22/03 – 27/05/1945), Deputy Commandant for Medical Affairs (28/05 – 4/09/1945) and Hospital Commandant (5/09 – 20/10/1945), upon which he was promoted to Colonel (Fig. 11) [1, 3, 4].

Personalausweis Nr. 4085
ausgestellt **A**

Fragebogen zur erstmaligen Meldung der Heilberufe.

Kwestionariusz dla pierwszego zgłoszenia zawodów leczniczych.

Heilberufe im Sinne dieser Meldung sind: Ärzte, Apotheker, Zahnärzte, Dentisten mit Berechtigung die selbständige Praxis auszuüben, Zahntechniker ohne Berechtigung die selbständige Praxis auszuüben, Feldschere, Hebammen, Fellezerer, Polozyn, Pflegekräfte, Pflegekräfte, Masseurs, Masseurs, Sprechstundenhilfen, Laboranten, Desinfektoren.

Krankenpfleger, Krankenpflegerinnen, Krankenschwestern, Masseure und Masseusen, Sprechstundenhilfen, Laboranten, Desinfektoren.

Die Fragebogen müssen gewissenhaft und sorgfältig ausgefüllt und deutlich geschrieben werden. Vor der Ausfüllung sind zunächst sämtliche Fragen zu lesen.


Kwestionariusz winien być wypełniony czytelnie i zgodnie z prawdą. Przed wypełnieniem należy odczytać wszystkie pytania.

Gesundheitskammer des Distrikts: Warszawa
Isba Zdrowia Dystryktu:

Kreishauptmannschaft: Warszawa
Starostwo Okręgowe:

Kreis: -
Powiat:

Art des Heilberufes: lekarz
Rodzaj zawodu leczniczego:



1. **Familiennamen (bei Frauen auch Geburtsnamen):** MALINOWSKI
Nazwisko (u kobiet zamężnych, nazwisko panieńskie):

2. **Vorname (Rufnamen unterstreichen):** ADOLF
Imię (główne imię podkreślić):

3. **Ständiger Wohnort und Wohnung:** Warszawa ul. Dynasy 4 m. 10.
Stale miejsce zamieszkania (ul. nr domu i mieszk.):

4. **Praxisstelle bzw. Arbeitsstätte:** " - "
Miejsce wykonywania zawodu:

a) bei selbständigen Heilberufen Praxisstelle: " - "
przy zawodach samodzielnych miejsce wykonyw. praktyki:

b) bei angestellten Heilberufen Arbeitsstätte (Arbeitgeber, Krankenhaus, Klinik usw.): " - "
przy zawodach niesamodzielnych miejsce pracy (pracodawca, szpital i t. p.):

Warszawa Szpital Ujazdowski

5. **Heimatanschrift:** Warszawa
Miejsce przynależności:

6. **Tag, Monat und Jahr der Geburt:** 16/29.XII.1891.
Dzień, miesiąc i rok urodzenia:

Geburtsort: m. Wałk **Kreis:** Łotwa
Miejsce urodzenia: Powiat:

7. **Sind Sie ledig, verh., verwitwet, geschieden?** żonaty
Stan (wolny, żonaty, owdowiały, ewentualnie rozwiedziony):

Der Ehefrau a) Mädchenname: Tyszkiewicz **b) Geburtsdatum:** 15.VII.1901.
Zona a) Nazwisko panieńskie: b) data urodzenia:

8. **Zahl und Geburtsjahr der Kinder (die Verstorbenen in Klammern):**
Ilość i wiek dzieci (zmarłe wymienić w nawiasie):

1. Adolf Władysław 13 lat 2. - 3. -

9. **Religiöses Bekenntnis:** rzymsko-katolickie
Wyznanie religijne:

10. **Staatsangehörigkeit am 1. 9. 1939:** polska
Przynależność państwowa w dniu 1. 9. 1939:

-48-

Figure 10. Registration form of Dr Adolf Malinowski completed for the occupational German Gesundheitskammer Warschau, 1940
Rycina 10. Ankieta rejestracyjna dr. Adolfa Malinowskiego w okupacyjnej Gesundheitskammer Warschau, 1940 r.



Figure 11. Col. Adolf Malinowski, MD, Commander of 3rd District Hospital in Krakow, 1945

Rycina 11. Plk lek. Adolf Malinowski, komendant 3. Szpitala Okręgowego w Krakowie, 1945 r.

After the war, Dr Malinowski and his family had nothing to return to in Warsaw. All their possessions, moved from the Psychiatry building to Ujazdowski Castle before the hospital evacuation, burned together with the castle. Ironically, the Psychiatry building survived the war. It was demolished in 2007 and replaced by the Embassy of the Federal Republic of Germany.

The last stage of the long military service of Dr A. Malinowski was as Commandant of District Hospital No. 6 (renamed on 10 April 1946 as Garrison Hospital) in Gdańsk-Oliwa (Fig. 12). His superior at that time, Head of the Department of Healthcare at the Command of Military District No. 2, Col. Mieczysław Kowalski MD, wrote in an employee review: "Col. Malinowski MD is a good organiser and a good hospital commandant. He is regarded with respect by his employees. Malinowski is a specialist in psychiatry on a university level. He does not run a private practice, despite ample opportunities, and he devotes his entire time and effort to the service. A very useful person in the army. He meets all the requirements of the present position."

The opposite view of Malinowski was expressed by the Deputy Head of the Command of Military District No. 2, responsible for political and pedagogical aspects, Lt. Col. Marian Gutaker: "An old officer of the Sanation period. From the political point of view, he demonstrates distance to the present regime. He favours officers presenting reactive attitudes. He should not hold an independent position. Malinowski should be demobilised."

On 21 September 1946, based on the decision of the Military Medical Commission of the Hospital of the Ministry of National Defence in Warsaw, Dr Malinowski was declared "unfit for military service and removed from the register" and as of 31 March 1947, he was retired. The position of Commandant of the Hospital was taken over by Lt. Col. Zofia Trawińska MD [1, 4].

From the beginning of 1946, Col. Malinowski maintained scientific co-operation with the Department of Psychiatry of the Physician's Academy (in 1950 renamed the Medical Academy) in Gdańsk (AMG). The Head of the department was Prof. Tadeusz Bilikiewicz, MD, PhD in philosophy (specialising in the history of medicine) (1901-1980); a few years later, he received the title of PhD in medicine [34]. After his release from the army, on 1 April 1947, Dr Malinowski was employed at the department as adjunct professor. On 7 August 1947, based on the dissertation entitled "Enuresis in soldiers", published in print in 1938, he received the degree of PhD in medicine [3]. The Medical Faculty Council of the Medical Academy in Gdańsk granted him the position of adjunct professor and *veniam examinandi* in psychiatry, in the absence of a professor [4]. During his eight years of work at the department, Malinowski published 12 scientific and journalistic articles on the treatment of alcoholism, the need to create an Institute of Forensic Psychiatry, improving forensic psychiatric adjudication and other subjects [35-47]. Following the legal regulations at that time, on 12 December 1953, Adolf Malinowski, PhD, applied to the Rector of the Medical Academy in Gdańsk for the scientific title of Assistant Professor. Unfortunately, the application was blocked by Prof. T. Bilikiewicz, who submitted a letter to the Regional Prosecutor's Office in Gdańsk on 21/01/1954 in which he accused Dr Malinowski and his partner, expert Adjunct Professor Dr Maria G., of making a mistake in a forensic psychiatric opinion report issued on 26/11/1953 after an observation at the department. The letter was read in public during the court trial. According to Dr Malinowski, the aim of this unprecedented event was to discredit the experts and to block his application for the Assistant Professor title. Despite the fact that the subsequent "superopinions" issued by three experts from three different academic centres did not confirm the allegations of Prof. T. Bilikiewicz, it did not prevent the negative consequences of his actions for Dr Malinowski. As a result, on 31 August



Figure 12. Col. Adolf Malinowski, MD, Commander of 6th District Hospital in Gdańsk-Oliwa among the patients, 1947

Rycina 12. Płk lek. Adolf Malinowski, komendant 6. Szpitala Okręgowego w Gdańsku-Oliwie wśród pacjentów, 1947 r.

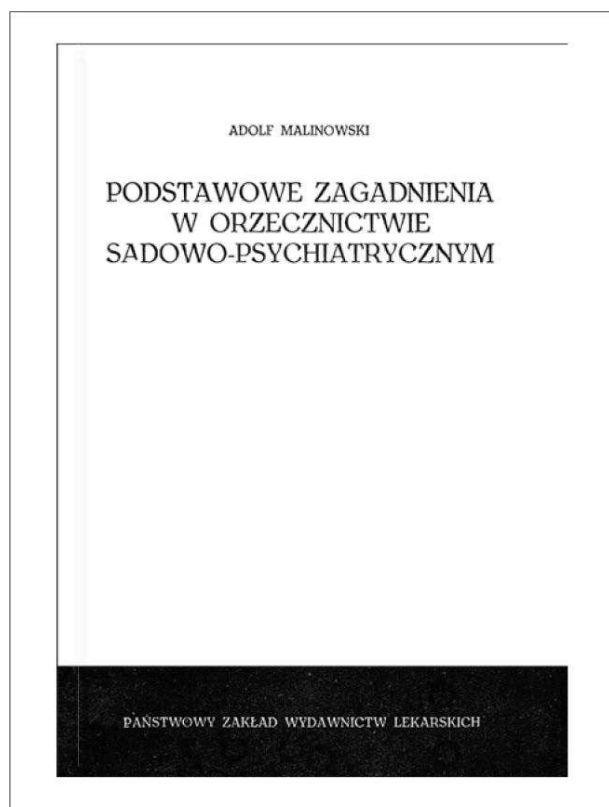


Figure 13. Adolf Malinowski's "Basic Issues in Forensic Psychiatric Expertises" book cover, 1961

Rycina 13. Okładka książki dr. med. Adolfa Malinowskiego - „Podstawowe zagadnienia w orzecznictwie sądowo-psychiatrycznym”, 1961 r.

1954, he lost his job at the Medical Academy in Gdańsk, together with the status of a researcher. It prevented him from applying to the vacant position of the Head of the Chair of Psychiatry at the Medical Academy in Szczecin, offered by the Ministry of Health [4, 48-49]. Following unsuccessful, dramatic appeals regarding the decision of the Medical Academy in Gdańsk, Dr Malinowski took the position of Deputy Head of the Healthcare Department of the District Management of the State Railway in Gdańsk. He described his experience and extensive knowledge in formulating forensic psychiatric opinions in two editions of his book *Fundamental concepts in developing forensic psychiatric opinions* (Fig. 13) [49-54].

He died suddenly on October 12, 1962 in Sopot and was buried there with military honors [4].

Zdzisław Jaroszewski MD, PhD (1906-1999), a recognised Polish psychiatrist, wrote after Dr Malinowski's demise: "Dr Adolf Malinowski MD, one of the nestors of Polish psychiatry, was among the most popular members of the Polish Psychiatric Association. His colleagues and many students liked his lively temperament and always interesting presentations at the meetings and symposia in which he regularly participated and which he sometimes chaired. He passed away while still demonstrating his full creative potential. On his desk he left the notes for the textbook on *Forensic psychiatry* he was working on for the National Institute of Medical Publications" [55].

Half of the 36 scientific and journalistic publications of Col. Adolf Malinowski MD, PhD explore the military psychiatric problems. They were all written before 1939. At the time of their publication, they were innovative. Today, they provide a valuable source of knowledge

about Polish military psychiatry. Quotations from these articles, in which the original terminology has been preserved, allow us to reconstruct the psychological portrait of their author and a military psychiatrist, a pragmatist and humanist [28, 55].

Goals of military psychiatry

"The primary goal of military psychiatry is to determine, in a professional manner, the fitness for military service of individuals whose mental condition indicates pathological abnormalities or is doubtful" [19].

"(Psychiatric) expertise and care should be close and available to the front-line units and to the unit physicians. (...) The proximity and easy access to psychiatric expertise are of great importance in so-called "psychiatric borderland", such as the mildest mental disorders or mental retardation, psychopathies, psychoneuroses, drug addiction etc. ("minor psychiatry"). Experience has shown that in first-line units too distant from a military hospital, thus from specialists, "borderland cases" are underestimated, which contributes to increased criminal rates in these units" [19].

"Ignoring the so-called "psychiatric borderland" in the face of war rebounds painfully in the future; the element with limited mental potential at the time of war becomes a factor disorganising the unit, and after the war forms a large group of disgruntled individuals who apply for invalidity pensions due to allegedly traumatic neuropsychiatric disorders" [20].

Psychiatry during the war

"For the psychiatric service to be effective at the moment of mobilisation and outbreak of war, it is necessary to have the appropriate management personnel, needed at the time of war, properly trained and prepared during peace time, and the remaining professional personnel and service (physicians, nurses, orderlies) must be included in the records as specialists (especially those assisting military personnel of psychiatric wards)" [20].

"The principles of psychiatric evacuation during the war should include a possibly quick removal from the front line to the back or to the country those who are mentally ill - severely and chronically (...) - and to keep within the front line all those with mild mental disorders (...) in order to provide them with proper treatment and enable their return to the front-line service or to assist in the vicinity of the front line [20]."

"Most neuroses, psychoneuroses and reactive conditions do not require evacuation to the rear, and may be effectively treated in the front-line area, and in case of trench warfare, even within the division (...). Evacuation increases the symptoms of the disease, which with time develop into pension neurosis" [20].

Psychopathy and military service

"The problem of limited mental potential, i.e. psychopathy, during the war comes to the fore not only because psychopathies create the basis for the development of (...) psychogenic reactions, but also because psychopaths in the army constitute the unruly element that cannot adjust to the conditions of war and the requirements of military discipline" [20].

"Diagnosing psychopathy in the case of unreliable anamnesis is very difficult, as the most characteristic signs of psychopathy are not clinical symptoms, but rather the social uselessness of patients, due to the pathological character traits. Therefore, numerous classifications of psychopathy are of little importance, as they are too complicated and varied" [20].

"In the plethora of psychogenic reactions, it is sometimes difficult to distinguish the conditions caused by particularly strong affects (mental shock) from those resulting from a specific defensive reaction of individuals with a specific mindset in the face of often insignificant or imaginary dangers ('escape into a disease')" [20].

"Psychogenic mental disorders usually develop in individuals with an innate or acquired neuro- and psychopathic personality. However, during the war sometimes transient mental disorders are observed in healthy individuals, without inherited disorders and previously revealing no symptoms of limited mental potential" [20].

Psychoprophylaxis in the army

"A modern approach in military training requires developing individual character traits in every soldier to make him capable of quick and independent orientation, that is to become a leader of a small group. Only individuals with full mental potential, i.e. intelligent and balanced, can perform these tasks" [19].

"Effective and early elimination of ill individuals from the drafted group subject to military service on the one hand depends on properly organised psychiatric expert diagnosis and care in the army, and on the other on sufficient awareness among all the military physicians and commanders of the role of psychiatric prophylaxis" [19].

"However, exaggeration and hasty conclusions should be avoided, especially in the case of recruits who, even when mentally healthy, may have difficulty in adjusting to the conditions and requirements of the life in barracks, which, initially, may make them appear less mentally capable" [26].

"Most intern physicians, graduates of the Medical School for Cadets, had a 2-4 week long internship at the psychiatric ward at the Centre for Sanitary Education, and all interns had to listen at the ward to a cycle of lectures (with presentation of cases) on the management of mentally ill patients in the army. Special attention was

paid to careful examination of “mean malingerers” and “recidivist criminals”, as mental disorders were often found in these soldiers” [26].

“Soldiers with mental retardation, undiagnosed in time, cause a number of undesirable phenomena in the army. They are the so-called “losers”, who due to their limited understanding, helplessness and physical awkwardness lower the results of the general training of the unit and thus become subjects of constant anger, mocking, ridicule from their colleagues and a cause of irritation of their superiors. (...) Disciplinary punishment of the mentally retarded and assigning them additional tasks is pointless, ineffective, and even detrimental. Feeling aggrieved and impaired in the army, they often seek comfort in absence without leave, desertion and suicidal attempts, or try to achieve release from the army resorting to self-harm and simulation of diseases, in a strikingly primitive, naive and sometimes ridiculous manner” [23].

Enuresis and military service

“Patients with involuntary enuresis present very complex cases regarding the diagnosis and qualification for service (*crux medicorum militarium*). This is due to the fact that there are no predetermined and decisive differentiating symptoms (...) that would allow us to determine with certainty that the condition is not simulated. (...) I would like to remind military physicians who tend to seek simulation everywhere, and who see a cheater in every patient with enuresis, that for doctors simulation often starts where their knowledge ends” [29].

Alcohol and the army

“Promotion of abstinence has not been introduced properly in the army. Drinking alcohol is often treated as a desirable sign of certain bravado and camaraderie, one could say a social virtue. Superiors and senior soldiers often provide a bad example to their charges and younger colleagues. Various types of people are found in the army: inexperienced boys from backwater villages to “experienced drunks” from urban centres, industrial towns and cities, to scum and menace to society. In these conditions, bad examples, encouragement and opportunities for drinking abound. In some individuals enforced abstinence during the stay in the barracks sometimes results in an unusual reaction to the alcohol consumed later. It is not surprising then that in the army we observe a considerable rate of crimes committed while under the influence of alcohol” [21].

Formulating forensic-psychiatric opinions regarding soldiers

“If a defendant is diagnosed with insanity or a significantly limited sanity, we recognise that such individual should not remain in the army. How can we guarantee that in the

future he will not commit the same crimes due to his pathological mental state. (...) From the point of view of the army, it does not suffice that the soldier be punished. Further offences must be prevented and the individual providing the bad example and spreading depravity must be removed from the military environment” [21].

“It is difficult to separate neurology and psychiatry completely, as the two are closely related areas. Until recently, physicians combined these specialisations in their practice, and in the past, internists treated neurological conditions. It is a well-established fact that organic cerebral diseases are always associated, to a greater or lesser extent, with pathological mental symptoms and, similarly, in physical diseases we often observe psychoneurotic symptoms. (...) Lawyers must be aware that neurology and psychiatry are separate specialisations and that a neurologist cannot always replace an expert psychiatrist in a court of law” [49].

It is a shame that the post-war political regime, and maybe also the smugness of his successors, prevented the use of the professional knowledge and extensive experience of Dr Adolf Malinowski in the military medical education. His sentimental approach to the military uniform is demonstrated in a memory of Cmdr. Romuald Tyszkiewicz MD (1935-2017), whose father, murdered by the NKVD, was the youngest brother of Malinowski's wife, Wacława *de domo* Tyszkiewicz. It was a memory of the strong emotion expressed by his uncle when, wearing a somewhat tight colonel's uniform, he went for a walk, at his request, along the main promenade in Sopot with Romuald Tyszkiewicz, wearing his sub-lieutenant's uniform, after his promotion in the Military Academy of Medicine in 1960 [5, 56].

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