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The Economic Crisis Effects on the Cross-Contamination Control in Dental Laboratories

Diana DIACONU[1], Anca VITALARIU[2], Monica TATARCIUC[3], Alice MURARIU[4]

Abstract

The aim of our study was to examine the knowledge in infection control among dental technicians working in commercial dental laboratories in Iasi and to analyze whether the economic crises determines the decrease of exigencies related to the prophylactic measures. We used for our research a questionnaire containing thirteen questions conceived by the authors. We received 108 answers out of 113 representing an answer rate of 95.57%. The study was conducted between August-October 2013. We noticed that most technicians, 95.4%, are aware of the existence of a real contamination risk, both of the lab surfaces and the personnel, however we have noticed a decrease of vigilance when they are forced to reduce the lab budget. Depending on their length of service corroborated with the effects of budget reduction, the analysis carried out demonstrates the existence of some statistically significant differences between the three age groups, the reduction of expenses determined by the economic crises is higher for those having a medium length of service as compared to the younger or older ones. Our recommendations are to provide practical courses for the reevaluation of knowledge and behaviour towards the standard procedures for infection control in the dental laboratory and guidelines for practitioners. For dental students and dental technology students is important to be educated about this issue as a component of their curriculum.

Keywords: economic crisis; cross-infection; dental laboratory; questionnaire.

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Introduction

Financial crisis started in 2008, got worse in 2009 and has continued so far directly affecting the economy and having a significant impact on society. At world level, financial crisis has gradually turned into economic unbalances. This has determined population to considerably decrease consumption, which meant the dwindling of economy and the blocking of economic growth. The numerous economic studies carried out in this period demonstrate an obvious decrease of individual's life (Bostan & Grosu, 2010). If up to 2008, the needs of superior order had priority, nowadays we go back to the basis of Maslow's pyramid, taking into consideration the fact that the people have lowered to a certain degree the standards according to which they measure the quality of life (Rova & Mano, 2009).

This financial crisis has had not only a major economic impact but also a social one, all the segments of the society being affected to a smaller or higher level. Medical services suffered in this period of recession following the reduction of funds allocated to health and the decrease of individuals' addressability to private medical practices (Stanciu, 2013; World Health Organisation, 2013; Dobos, 2006). In this general context, the dental services have been strongly affected by the economic crisis, dentists noticing lately a significant decrease of the number of patients (DiMatteo, 2008). That is why, in order to keep their patients, many dentists have decided to reduce the tariffs (Parker, 2009). This decrease of prices was possible through the purchase of cheaper materials of inferior quality, the decrease of costs for consumables and the reduction of expenses in the dental laboratory (Chaoyi, Liwei, Li, Min & Haiyang, 2012).

The dental practice supposes a series of clinical and technological stages involving a permanent change of prosthetic devices between the dental office and the dental laboratory. In this context, there is a major risk of contamination for patients and practitioners if the prophylactic norms are not rigorously observed. If in the dental office asepsis and antisepsis rules are clearly established and the circuit of instruments is strictly controlled, the risk of crossed infection is still present in the dental laboratories (USAF, 2004; CDC, 2003; Federation Dentaire Internationale, 1987). This is the reason why the institution of strict norms is imperative so as to reduce the contamination risk to a minimum both for the personnel and patients during the clinical-technological algorithm (Kimondollo, 1992). The reduction of costs of services in the field of dental medicine must not occur to the detriment of patients' and medical personnel's health.

The few studies carried out so far in Romania focused on the issues of control of the crossed infection in the dental labs without appreciating the impact of the current economic crisis on the strict observance of the prophylactic norms (Barlean, Danila & Saveanu, 2011; Diaconu, Tatarciuc & Vitalariu, 2012). The aim of

our study was to examine the knowledge and practices in infection control among dental technicians working in commercial dental laboratories in Iasi and also to analyse whether the economic crises determines the decrease of exigencies related to the prophylactic measures.

Materials and methods

To perform this research, we used a questionnaire containing 13 questions conceived by the authors. The questionnaire was divided into two sections: the first section containing 9 questions focuses on the testing of knowledge of dental technicians regarding the control measures of crossed infection; the second section containing 4 questions evaluates whether the observance of prophylactic measures has imposed additional expenses in the context of the economic crisis. The questionnaire was pilot-tested by distributing it to twenty dental technicians who work in or collaborate with our university dental clinic. The answers to the pilot test were analyzed to assess the clarity and relevance of the questions, and modifications were made. After receiving feedback from pilot test participants, it was sent to 26 laboratories of Iasi. The study was conducted between August-October 2013.

Statistical analysis

Data were analyzed with the SPSS 17.0 system for Windows (SPSS Inc. Chicago, IL, SUA). Variations in distributions of the answers were analyzed by cross tabulations. Statistical significance of the bivariate analysis was assessed by the Pearson chi-square, at the 0.05 level. Correlations between different questions were determined by Pearson correlation coefficients.

Results

We received 108 answers out of 113 representing an answer rate of 95.57%. Dental technicians who participated in the study were divided into three lots depending on their length of service in the dental lab: 38 of them had less than one year length of service (35.2%), 33 respondents had the length of service between 1 and 5 years (30.6%), and 37 technicians had a length of service over 5 years (34.3%). The returned questionnaires were reviewed for completeness and statistically analyzed. In the first stage of statistical processing, the univariated descriptive analysis has been used in order to calculate the percentage of responses to the survey questions (Table 1), and the bivariate analysis to explore existing relationships between two variables, namely: the survey questions that make reference

to the economic crisis in relation to length of service (Table 2). The technicians' answers were systematized in Table 1.

Table 1. *The technicians' answers*

Questions	*Answers*	*Nr*	*%*
1. It is possible to contaminate surfaces and instruments in dental laboratory?	a. YES b. NO c. I dont't know	103 5 0	95.4 4.6 0
2. There is a risk of contamination for prosthesis/prosthetic parts sent from lab to dental office?	a. YES b. NO c. I dont't know	103 5 0	95.4 4.6 0
3. There is a risk of contamination for dental laboratory workers?	a. YES b. NO c. I dont't know	100 6 2	92.6 5.6 1.9
4. What do you think are the sources of contamination? Specify some of them.	a. impressions b. prosthesis c. everything d. I don't know	51 2 48 7	47.2 1.9 44.1 6.5
5. What pieces received from the dental office should be disinfected in the lab?	a. impressions b. prosthesis c. all d. I don't know	35 1 68 4	32.4 0.9 63 3.7
6. What pieces sent to the dental office should be disinfected in the lab?	a. wax-up b. prosthesis c. all d. none	2 30 70 6	1.9 27.8 64.8 5.6
7. Do you consider necessary the disinfection of the laboratory working tools?	a. YES b. NO c. I dont't know	98 9 1	90.7 8.3 0.9
8. Do you perform surfaces and air decontamination every day?	a. YES b. NO c. I dont't know	41 55 12	38 50.9 11.1
9. Do you wear protective equipment (gloves, goggles) during maneuvers?	a. YES b. NO c. Sometimes	60 8 40	55.6 7.4 37
10. Do you try to reduce the costs by changing polishing pastes and brushes at larger intervals of time?	a. I change them daily b. I change them weekly c. I change them after each use d. I don't know	6 81 10 11	5.6 75 9.3 10.2
11. Do you consider an additional financial effort using the cross-infection preventing methods?	a. YES b. NO c. I dont't know	34 61 13	31.5 56.5 12
12. You consider that the economic context of recent years imposed spending reduction regarding preventing methods?	a. YES b. NO c. I dont't know	26 56 24	24.1 53.7 22.2
13. Which contamination prevention methods you could give in order to reduce the laboratory costs?	a. mask, gloves, glasses b. surfaces decontamination c. air decontamination d. none	10 1 81 16	9.3 10.8 75 14.8

From the dental technicians' answers we noticed that 95.4% are aware of the real risk of contamination correlated to the surfaces and instruments in the lab. The same high percentage of 95.4% represents those who are aware of the high risk of crossed infection having as a vector all the prosthetic devices coming from the dental office or leaving the laboratory. Answers to question no. 3 about the rendering sick of the lab personnel through the handling of contaminated prosthetic devices were affirmative for 92.6% of respondents.

A reduced percentage of 47.2% consider only impressions as the most important source of contamination, whereas 63% think that all devices coming from the dental office must be disinfected by the technician (question 5). A similar percentage was obtained for question no. 6 where 64.8% declared that the same devices must be disinfected as well when they are sent back to the dentist.

A well known aspect regarding decontamination methods is the disinfection of lab surfaces sustained by the percentage of 90.7% of those who answered question no. 7. At the opposite end there is the reduced knowledge of technicians about the air decontamination methods, and this is supported by the fact that only 38% of them do this every day (question no. 8), and in the context of reduction of lab budget 75% would give up this procedure (question no. 13). Wearing protective equipment (gloves, glasses) is a daily routine for 55.6% of respondents whereas 37% sporadically use these prevention measures (question 9). The last four questions focus on the economic side of the activity in the dental laboratory due to the reduction of expenses in the context of decrease of clinical handworks. Most respondents (75%) answered question 10 regarding the interval for changing the denture pumice saying that they do this every week, 5.6% daily and 9.3% after each use. 31.5% of technicians consider the application of all prevention methods as a supplementary financial effort, whereas a higher percentage 56.5% affirms that this does not represent a financial burden (question 11). In connection with the context of economic crisis, 53.7% answered negatively the question about the need to reduce the expenses allocated to the prevention methods (question 12). If the lab expenses were to be reduced, 14.8% declared that they would not give up these procedures.

Besides the descriptive statistics analysis, by means of cross tabulations and Chi-square test we made a differentiation of answers to questions referring to the effect of economic crisis depending on the length of service (table 2).

As for the sparing of pumice and wheels (question 10), most dental technicians, regardless of their age, declared that they do this once a week. We have noticed statistically significant differences $p=0.005$ in terms of the daily change of pumice and wheels within the meaning that the highest percentage (21.1%) belongs to those having the length of service within one year as compared to the elderly ones who perform this activity every day in a percentage of only 5.4%. At the opposite

end, there were the ones having the length of service between 1 and 5 years since no technician of this group declared anything about this aspect.

Answers to question no. 11 demonstrate that most technicians do not consider these prevention methods as an additional financial effort (50% of those having a length of service within one year, 57.6% having the length of service between 1 and 5 years and 62.2% having a length of service over 5 years), and the differences identified do not have a statistic significance p=0.531.

As for the reduction of lab budget, only 34.2% of those having a length of service within one year and 28.9% of those having a length of service over 5 years declared that they also reduced the expenses related to these decontamination methods (question no. 12). Most answers belonged to those who declared that they have reduced the lab expenses, the highest percentage belonging to those having the length of service between 1 and 5 years (63.6%) followed by the young ones 36.8%, and finally 24.2% of the old ones. The differences identified for the 3 age groups have statistic significance (p=0.005).

The methods for infection prevention (question no. 13) which they would give up are, for most categories of length of service, the ones used for air decontamination: 57.9% for the group having a length of service within one year, 90.9% for the group having the length of service between 1 and 5 years and 78.4% for those having a length of service over 5 years. Only 3% of those having the length of service between 1 and 5 years would give up the methods for surface decontamination. The differences identified have statistic significance, p=0.023 (Table 2).

Table 2. The answers according to the technicians' length of service

Questions	*Answers*	*< 1 year (%)*	*1-5 years (%)*	*> 5 years (%)*	*p value; Pearson chi-square value (χ^2)*
10. Do you try to reduce the costs by changing polishing pastes and brushes at larger intervals of time?	a. daily b. weekly c. after each use d. I don't know	2.6 65.8 21.1 10.5	9.1 90.9 0 0	5.4 70.3 5.4 18.9	p=0.005 χ^2=18.47
11. Do you consider an additional financial effort using the cross-infection preventing methods?	a. YES b. NO c. I dont't know	31.6 50 18.4	30.3 57.6 12.1	32.4 62.2 54	p=0.531 χ^2=3.165
12. You consider that the economic context of recent years imposed spending reduction regarding preventing methods?	a. YES b. NO c. I dont't know	34.2 36.8 28.9	12.1 63.6 24.2	28.9 24.2 13.5	p=0.005 χ^2=9.372
13. Which contamination prevention methods you could give in order to reduce the laboratory costs?	a. mask, gloves, glasses b. surfaces decontamination c. air decontamination d. none	15.8 0 57.9 26.3	3 3 90.9 3.1	8.1 0 78.4 13.5	p=0.023 χ^2=15.854

Pearson correlation analysis

From Pearson correlation analysis presented in table 3, we may notice a strong association between the answers obtained for questions 11 and 12, r=0.459, p=0.01. This aspect demonstrates that the methods dedicated to contamination prevention (question no. 12) represent, in the current context of economic crisis, an additional financial effort for the dental laboratory (question no. 11). The same positive correlation with statistic significance has been noticed between the answers given for questions 11 and 13, but with a lower intensity, r=0.350, p=0.01. The results of Pearson analysis show that out of the same financial motivation some technicians are ready to give up certain methods for crossed infection prevention (question no. 13), one of these being the daily decontamination of surfaces (question no. 8). The association identified has a statistic significance and a lower correlation coefficient, r=0.303, p=0.05.

Table 3. *Correlations coefficients (r) of the different questions about economic crisis and infection control practices*

	Changing pumices/ brushes at larger intervals of time (10)	Additional effort (11)	Reducing costs(12)	Quit preventive measures (13)	Wear protective equipment (9)	Daily decontamination (8)
Changing pumices/brushes at larger intervals of time (10)	1.000					
Additional effort (11)	.064	1.000				
Reducing costs (12)	.125	.459**	1.000			
Quit preventive measures(13)	-.105	.350**	.073	1.000		
Wear protective equipment(9)	-.072	.080	.038	-.134	1.000	
Daily decontamination (8)	.101	.281*	.094	.303*	.085	1.000

*** Correlation is significant at the 0.01 level (2-tailed).*

** Correlation is significant at the 0.05 level (2-tailed).*

Discussion

If in the dental offices, asepsis and antisepsis rules are clearly established and the circuit of instruments is strictly controlled, the risk of cross-infection is still present in the dental laboratories (Oosthuysen, Potgieter & Blignaut, 2010). Numerous studies have shown that in the labs the transmission of microorganisms takes place by means of impressions received from the dentist, and by processing of acrylic dentures and intermediate prosthetic devices which come back to the lab after they have been checked or adapted in the patient mouth (Barlean & Danila, 2003; Vitalariu, Diaconu, Tatarciuc, D., & Tatarciuc, M., 2012). Surveys published as early as the 90's show that more than 60% of the removable dentures coming from the dental office were contaminated with pathogen germs from the oral cavity (Sofou, Larser, Fiehn & Owell, 2002; Verran, Kossar & McCord, 1996). In the specialized literature, they say that 9 out of 10 prosthetic devices sent completely sterile from the dentist were contaminated after their processing in the lab with microbial germs that do not belong to the oral saprophyte flora and which may cause serious diseases for patients (American Association of Public Health Dentistry, 1986).

For these reasons, it is mandatory to decontaminate all prosthetic devices coming in the lab from the dental office. In this paper, we have noticed that only 63% of technicians decontaminate all the prosthetic devices coming from the dentist, impressions occupying the first place as contamination vectors in a percentage of 47.2%. The results obtained are similar to the percentage obtained by Barlean et al in the study carried out in 2011 in Iasi (Barlean *et al.*, 2011).

In a survey carried in Brazil by Campahna et colab., they found out that only 9.2% of technicians disinfect the prosthetic devices, the rest of them just washing them in water (Campahna, Pavarina, Vergani, Machado & Giampaolo, 2004).

Another important source of contamination in the dental laboratory, overlooked by dental technicians, is represented by the wheels and pumices used in the processing of the prosthetic devices (Witt & Hart, 1990; Tatarciuc, Zamfirache, Stefan, Vitalariu & Diaconu, 2010). From our present research results that 75% of technicians change this type of instruments once a week, possibly due to the need to spare as many materials as possible, though the standard procedures for infection control in the labs provide a daily change (Agostinho, Miyoshi, Gnoatto, Paranhos, Figueiredo, Salvator, *et al.*, 2004; Bhat, Shetty & Shenoy, 2007). This is performed by only 9.3% of all technicians and, depending on the length of service, we obtained statistically significant differences ($p=0.005$), only 21.1% of those having a length of service within one year declare this aspect and, unfortunately, no technician having the length of service between 1 and 5 years declares this. In a similar survey carried out in Jordan, it has been noticed that 85% of technicians very rarely change the dental burs (Nawaf Al-Dwairi, 2007).

In the dental laboratories, the procedures for cross-infection prevention focus on the following aspects: protection barriers against the microbial germs (gloves, mask, and glasses), decontamination measures for impressions, instruments and lab air and the immunization of the lab personnel against hepatitis B virus (Raghav, 2013). In this study, we have noticed that only 55.6 % of technicians regularly use gloves, protection glasses and mask. Other researches in the field show that in the labs from the Great Britain, 44% of technicians wear gloves and 74% wear glasses, unlike the technicians from Jordan where only 24% of technicians wear gloves and 35% wear a mask (Jagger & Harrison, 1995; Nawaf Al-Dwairi, 2007).

In Romania, the results of the study of 2011 published by Barlean et al, demonstrated that only 49.1% of technicians use protective equipment (Barlean *et al.*, 2011). From the correlation analysis carried out, we have noticed that there is a positive association and with strong intensity ($r=0.459$, $p=0.01$) between the answers for questions focusing on the possibility to give up the decontamination methods considered as an additional financial effort (questions 11 and 12). Although they are not in a high percentage, still the fact that 34.2% of those having a length of service within one year declared that they may give up decontamination represents an alarm signal in order to introduce these very important aspects for the public health in the conduct of young technicians as early as their academic studies. A third of them also declared that they would easily give up these procedures because they require supplementary funds. Also serious is the fact that a high percentage of 75% would give up the methods for lab air decontamination requiring the purchase of special equipment. Depending on their length of service, we have noticed statistically significant differences within the meaning that 90.9% of those having the length of service between 1 and 5 years declared that they give up this procedure unlike those having a length of service within one year whose percentage is lower, 57.9%. Otherwise, for this age category, we noticed that a very low percentage of only 3.1% would not give up any method for crossed infection prevention. These answers suggest an insufficient knowledge of the issues and require the increase of the knowledge level by post-academic courses and continuous professional training.

Conclusions

Although we found that most technicians (95.4% of respondents) are aware of the existence of a real contamination risk both of the lab surface and the personnel, however we have noticed a decreased vigilance when they are forced to reduce the lab budget. On the other hand, we have noticed a reserved attitude towards certain decontamination methods considered unnecessary, such as those addressing the air decontamination, 75% of respondents declaring this aspect. Taking into account that the activity supposes the existence of an environment with

powders and microorganisms resulted from the processing of contaminated prosthetic devices, this aspect must not be minimalized at all. The measures of personal protection do not represent a permanent need for 37% of respondent technicians which means that, although theoretical notions are known, they are not always put into practice. In the same line are the answers given for the question regarding the daily decontamination where only 38% of technicians answered affirmatively. That is why we consider important the organization of practical courses for the reevaluation of knowledge and behaviour towards the standard procedures for infection control in the dental laboratory.

Depending on their length of service corroborated with the effects of budget reduction, the analysis carried out demonstrates the existence of some statistically significant differences between the three age groups. Thus, we have noticed that the reduction of expenses determined by the economic crises is higher for those having a medium length of service as compared to the younger or older ones, and they also represent the lowest proportion of technicians who would not give up the methods for crossed infection prevention, regardless of the existing financial effort. As a conclusion, in the current conditions of reduction of the lab expenses caused by the lack of addressability to dental services, we notice an alarming aspect, namely the giving up on some decontamination methods (air, surfaces, and devices) in the dental laboratory. This is caused not necessarily by the lack of theoretical knowledge but mostly by a certain degree of negligence towards one's own protection and a lack of interest towards the real risk of cross-infection.

Recommendations

The most important strategy to improve compliance is to provide the practical courses for the reevaluation of knowledge and behaviour towards the standard procedures for infection control in the dental lab and guidelines for practitioners. As for dental technology students they should be educated about this important issue as a component of their curriculum (Nawaf Al-Dwairi, 2007; Haden, Hendricson, Kassebaum, Ranney, Weinstein *et al.*, 2010). Insufficient funding of social and medical services in Romania should not affect the health and quality of life of patients (Arpinte, Cace & Cojocaru, 2010). Such researches are warning signal for politicians emphasizing the long-term consequences of the economic crisis on health.

References

Agostinho, A.M., Miyoshi, P.R., Gnoatto, N, Paranhos, HdeF., Figueiredo, L.C., Salvator, S.L. *et al.* (2004). Cross-contamination in the dental laboratory through the polishing procedure of complete dentures. *Brazilian Dental Journal, 15*, 138-143.

American Association of Public Health Dentistry (1986). The control of transmissible diseases in dental practice. *Journal of Public Health Dentistry*, *46*, 13-21.

Arpinte, D., Cace, S., Cojocaru, S. (2010). Social economy in Romania. Preliminary approach. *Revista de Cercetare si Interventie Sociala*, *31*, 77-85.

Barlean, L., & Danila, I. (2003). Infection control in dentistry. *Oral Health and Dental Management in the Black Sea Country*, *4*, 12-17.

Barlean, L., Danila, I., & Saveanu, I. (2011). Prevention of infection transmission in dental laboratories. *Revista Medico-Chirurgicala a Societatii de Medici si Naturalisti*, *115*, 548-553.

Bhat, V.S., Shetty, M.S., & Shenoy, K.K. (2007). Infection control in prosthodontic laboratory. *Journal of Indian Prosthodontic Society, 7,* 62-65.

Bostan, I., & Grosu, V. (2010). The social effects of the current economic crisis on the European Union labour market. *Revista de cercetare si interventie sociala*, *31*, 7-21.

Campanha, N.H., Pavarina, A.C., Vergani, C.E., Machado, A.L., & Giampaolo, E.T. (2004). Cross-infection control policy adopted by dental tehnicians. *Revista de Odontologia da UNESP*, *33*, 195-201.

CDC (2003). Guidelines for infection control in dental health-care settings. MMWR 2003; 52 (No. RR-17),1–66. Available at www.cdc.gov/oralhealth/infectioncontrol.

Chaoyi, M., Liwei, Z., Li, Y., Min, Z. & Haiyang, Y. (2012). Current status, crisis and trends in Chinese dental technicians. *International Dental Journal*, *62*, 79–83.

Diaconu, D., Tatarciuc, M., & Vitalariu, A. (2012). Quantitative analysis of bacterial contamination in dental laboratory air. *Romanian Journal of Oral Rehabilitation, 4*, 27-29.

DiMatteo, A.M. (2008). The new economy and its impact on dental practice. *Inside Dentistry*, 10. Available at: http://www.dentalaegis.com/id/2008/12/the-new-economy-and-its-impact-on-dental-practice.

Dobos, C. (2006). Difficulty of access to health services. *Journal of quality of life, 1-2*, 7-24.

Federation Dentaire Internationale (1987). Recommendations for hygiene in dental practice, including treatment for the infectious patient. A revision of Technical Report nr 10. *International Dental Journal, 37*, 142-145.

Haden, N.K., Hendricson, W.D., Kassebaum, D.K., Ranney R.R., Weinstein G., *et al.* (2010). Curriculum change in dental education. *Journal of Dental Education*, *74*, 539-557.

Jagger, D.C., Huggett, R., & Harrison, A. (1995). Cross-infection control in dental laboratories. *British Dental Journal*, *179*, 93-96.

Kimondollo, P.M. (1992). Developing a workable infection control policy for the dental laboratory. *Journal of Prosthetic Dentistry*, *68*, 974-978.

Nawaf Al-Dwairi, Z. (2007). Infection control procedures in commercial dental laboratories in Jordan. *Journal of Dental Education, 71*, 1223-1227.

Oosthuysen, J., Potgieter, E., & Blignaut, E. (2010). Compliance with infection control recommendations in South African dental practices: a review of studies published between 1990 and 2007. *International Dental Journal*, *60*, 181-189.

Parker, M.A. (2009). Dental care during a recession. *Nord Carolina Medical Journal*, *70*, 352-353.

Raghav, D. (2013). Infection control in dental office: a review. *National Journal of Medical and Dental Research*, *1*, 66-69.

Rova, L., & Mano, R. (2009). The impact of financial crisis on the quality of life. *Journal of Applied Quantitative Methods*, *4*, 514-524.

Sofou, A., Larser, T., Fiehn, N.E., & Owell, B. (2002). Contamination level of alginate impression arriving at a dental laboratory. *Clinical Oral Investigation, 6*, 161-165.

Stanciu, M. (2013). The Romanian public health system in the European context. *Journal of quality of life, 1*, 47-80.

Tatarciuc, M., Zamfirache, I.C., Stefan, M., Vitalariu, A., & Diaconu, D. (2010). Microbiologic study regarding the risk of cross-infection in the technical laboratory. *Analele Stiintifice ale Universitatii Alexandru Ioan Cuza, Iasi*, *Sectiunea Genetica si Biologie Moleculara*, *11*, 53-58.

USAF (2004). *Guidelines for Infection Control in Dentistry*. Available at www.brooks.af.mil/dis/infcontrol.htm

Verran, J., Kossar, S., & McCord, J.F. (1996). Microbiological study of selected risk areas in dental technology laboratories. *Journal of Dentistry*, *24*, 77-80.

Vițalariu, A., Diaconu, D., Tatarciuc, D., & Tatarciuc, M. (2012). Factors involved in microbial colonization of acrylic resins. *Revista Medico-Chirurgicala a Societatii de Medici si Naturalisti Iasi, 2*, 600-604.

WHO (2013). *World Health Oragnisation Health. Health systems and economic crisis in Europe Impact and policy implication.* Available at: http://www.euro.who.int/__data/assets/pdf_file/0011/186932/Health-and-economic-crisis-in-Europe4.pdf

Witt, S., & Hart, P. (1990). Cross-infection hazards associated with the use of pumice in dental laboratories. *Journal of Dentistry*, *18*, 281-283.