

MANICURE/PEDICURE TECHNICIANS: BIOSECURITY KNOWLEDGE AND PRACTICES FOR VIRAL HEPATITIS

Manicures/pedicures: conhecimento e práticas de biossegurança para hepatites virais

Manicura /pedicura: conocimiento y prácticas de bioseguridad para la hepatitis viral

Article Original

ABSTRACT

Objective: To identify the biosecurity knowledge and practices of manicure/pedicure technicians for viral hepatitis. **Methods:** Descriptive, cross-sectional, quantitative study with a questionnaire used as a self-applied data collection tool, which was designed by the researchers, containing data on the population (gender, age, length of professional activity) and basic knowledge about hepatitis transmission, biosecurity and hygiene practices. **Results:** 96 manicure/pedicure technicians working in northwestern Paraná were interviewed. Most professionals have heard of the condition, but only 41.7% (n=40) were screened for detection of the hepatitis virus; as transmission via, 38.39% (n=77) reported the blood and 31.8% (n=63) the sexual intercourse. The reuse of disposable materials was reported by 60.4% (n=58); 55.2% (n=53) conducted sterilization of materials and 27.1% (n=26) did not. No significant association was evident between length of professional activity and the variables: heard about hepatitis (p=0.77025); undergoing screening tests (p=0.035476); reuse of disposables (p=0.42691); hand washing (p=0.32876); use of disposable gloves (p=0.33752); sterilization of materials (p=0.84443). **Conclusion:** The interviewed manicure technicians are not aware of the requirements of the Health Surveillance Agency regarding the prevention of hepatitis transmission.

Descriptors: Occupational Diseases; Security Measures; Disease Prevention.

RESUMO

Objetivo: Investigar o conhecimento e as práticas de biossegurança para hepatites virais de manicures/pedicures. **Métodos:** Estudo descritivo, transversal, quantitativo, através de questionário, utilizando instrumento de coleta de dados autoaplicado elaborado pelos pesquisadores, contendo dados da população (sexo, idade, tempo de atuação profissional) e conhecimentos básicos sobre transmissão de hepatite e práticas de biossegurança e higiene. **Resultados:** Entrevistaram-se 96 manicures/pedicures que atuam no Noroeste do Paraná. A maioria das profissionais já ouviu falar da patologia, mas somente 41,7% (n=40) fizeram o exame para detecção do vírus da hepatite; 38,39% (n=77) relataram como via de transmissão o sangue e 31,8% (n=63), a relação sexual. A reutilização de materiais descartáveis foi relatada por 60,4% (n=58); 55,2% (n=53) realizam esterilização de materiais e 27,1% (n=26) não a realizam. Não ficou evidenciada associação significativa entre tempo de profissão e as variáveis utilizadas: ouviu sobre hepatite (p=0,77025), realização de exames (p=0,035476), reutilização de materiais descartáveis (p=0,42691), lavagem de mãos (p=0,32876), uso de luvas descartáveis (p=0,33752) e esterilização de materiais (p=0,84443). **Conclusão:** As manicures entrevistadas não conhecem as exigências da Vigilância Sanitária no que concerne à prevenção da transmissão de hepatites.

Descritores: Doenças Profissionais; Medidas de Segurança; Prevenção de Doenças.

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RESUMEN

Objetivo: Investigar el conocimiento y las prácticas de bioseguridad para la hepatitis viral de manicura/pedicura. **Métodos:** Estudio descriptivo, transversal y cuantitativo a través de cuestionario con la utilización de un instrumento auto aplicado y elaborado por los investigadores con datos de la población (sexo, edad, tiempo de actuación profesional) y conocimientos básicos de la transmisión de la hepatitis y las prácticas de bioseguridad y higiene. **Resultados:** Se entrevistaron 96 manicuras/pedicuras del Noroeste de Paraná. La mayoría de las profesionales ya ha escuchado algo de la patología pero solamente el 41,7% (n=40) hicieron la prueba que identifica el virus de la hepatitis; el 38,39% (n=77) relataron la sangre como vía de transmisión y el 31,8% (n=63) la relación sexual. La reutilización de materiales desechables fue relatada por el 60,4% (n=58); el 55,2% (n=53) esterilizan los materiales y el 27,1% (n=26) no lo hacen. No se evidenció asociación significativa entre el tiempo de profesión y las variables utilizadas: escuchó sobre la hepatitis ($p=0,77025$), realización de pruebas ($p=0,035476$), reutilización de materiales desechables ($p=0,42691$), lavado de las manos ($p=0,32876$), uso de guantes desechables ($p=0,33752$) y esterilización de materiales ($p=0,84443$). **Conclusión:** Las manicuras entrevistadas no conocen las exigencias de la Vigilancia Sanitaria respecto a la prevención de la transmisión de la hepatitis.

Descriptores: Enfermedades Profesionales; Medidas de Seguridad; Prevención de Enfermedades.

INTRODUCTION

In recent years, the beauty and esthetic market brings has brought style patterns and images that reach all social strata and age groups. The result is characterized by the significant amount of workforce in this sector, including the manicure/pedicure technicians. These professionals tend to handle hands and feet tissues during the cuticle removal. This practice provides increased risk of exposure to biological agents present in the blood, such as hepatitis B and C viruses, in addition to the Human Immunodeficiency Virus (HIV)⁽¹⁾.

Hepatitis is an inflammation of the liver that can be caused by drugs and alcohol or infections by bacteria and viruses. There are six types of hepatitis: A, B, C, D, E and G. Infections by hepatitis B and C viruses constitute a serious health problem worldwide because of their high degree of chronicity, as they can progress toward liver cirrhosis and hepatocellular carcinoma⁽²⁾.

Hepatitis types B and C are significant public health problems worldwide, since it is estimated that approximately 720 million individuals are infected with hepatitis B virus

(HBV) and/or hepatitis C virus (HCV), with mortality rate around 25%⁽³⁾.

There is the possibility of hepatitis transmission to manicure/pedicure technicians, resulting from possible injuries during the procedures due to the use of sharps that may be contaminated with HBV and HCV whenever sterilization procedures are not performed. Such injuries can occur as a consequence of the use of eponychium pliers⁽⁴⁾ and by sharing sharp objects of personal use, such as blades, shavers, epilators and pliers, which are important sources in the percutaneous transmission of hepatitis. Moreover, the risk of cross-infection due to the fact that employees use the instruments in themselves should be considered⁽⁵⁾.

Public health states that manicure/pedicure technicians represent a new group with risk factors, as they may come into contact with material contaminated with blood⁽³⁾. This risk increases when, additionally, these professionals do not adhere to biosecurity measures, which include the use of Personal Protective Equipment (PPE), appropriate instrument reprocessing methods, disposal of single-use materials and hand hygiene⁽¹⁾.

They do not believe they can be agents in the transmission of micro-organisms and that the volume of blood to which they are exposed is important for the spread of the disease, despite being aware of the transmission of diseases by this route⁽⁵⁾. The main route of transmission of hepatitis B and C is the percutaneous parenteral via, and in each milliliter of blood presenting approximately 100,000,000 virus particles, it is enough to infect a person⁽⁶⁾.

Concerned about preventing the spread of the virus, the protection of these professionals, and the service provided, including the materials employed, the current health legislation should be followed in order to ensure the safety of customers and the quality of services⁽⁵⁾. This entire process plays a fundamental role in disease prevention and health promotion. Nevertheless, the recommended security conditions are not always followed by the establishments⁽⁷⁾.

Law no. 12,592, enacted on 2012/01/18, regulates the exercise of professional who perform hygiene and aesthetics activities, and hair, facial and body beautification of individuals, such as barbers, beauticians, hair removal estheticians, manicure and pedicure technicians. According to the Law, these should comply with health standards, making sterilization of materials and tools used during the procedures in their customers⁽⁸⁾.

The Brazilian National Health Surveillance Agency (Agência Nacional de Vigilância Sanitária - ANVISA) establishes that a sterilization routine should be observed for the material used in invasive procedures, which must be individually wrapped and stored in a proper and exclusive

place, with attention to control the sterilization expiration date. It is also mandatory to use PPE such as gloves and lab coat, performing customer's skin hygiene and antiseptics prior to starting the procedure⁽⁹⁾.

This study thus aimed at investigating the biosecurity knowledge and practices of manicure/pedicure technicians for viral hepatitis.

METHODS

Descriptive cross-sectional study with a quantitative approach, performed with 96 manicure and pedicure technicians residents in the city of Maringá, PR.

Random sampling of spontaneous adhesion occurred through direct approach to beauty salons and residences of autonomous professionals, held in June and August 2014. It included people aged over 18, regardless of sex, who acted as autonomous manicure/pedicure technicians, economically dependent on some sort of service contract

with a beauty salon and who agreed to participate in the study by signing the free and informed consent form.

The study employed an instrument developed by the researchers, structured in two parts: 1. Population data (gender, age, length of professional activity); 2. Basic knowledge of hepatitis transmission and biosecurity and hygiene practices. This was self-administered, with no interference from the researcher, and average response time of fifteen minutes.

Data was tabulated in Microsoft Excel[®] 2010 spreadsheets and statistically analyzed with the aid of Statistica 8.0[®] software. For qualitative variables, frequency tables with percentage were used. The chi-square test was used to verify the association between quantitative variables. The significance level of 5% was adopted, and associations were considering significant when $p < 0.05$.

This study is part of the research project "Hepatitis in Beauty Professionals: Practices, Serology and Preventive Attitudes", submitted to the UniCesumar Research Ethics Committee (CEP-CESUMAR), with approval no. 567,167.

Table I - Distribution of the answers obtained from manicure technicians on the knowledge of preventive measures for hepatitis. Maringá, PR, 2014.

Variables	n	%
Has heard of hepatitis		
Yes	92	95.8
No	4	4.2
Was submitted to diagnostic testing		
Yes	39	40.6
No	57	59.4
Result of the diagnostic test		
Negative	27	28.1
Positive	12	12.5
Unkown	57	59.4
Knows how hepatitis is transmitted		
Yes	71	74.0
No	25	26.0
How can one be infected with hepatitis		
Blood	77	38.9
Feces	2	1.0
Urine	8	4.0
Sexual intercourse	63	31.8
Pregnancy	48	24.2
Objects liable to be contaminated with hepatitis virus		
Razor blade	79	18.9
Toothbrush	31	7.4
Cuticle pliers	88	21.1
Nail pliers	64	15.3
Nail clippers	54	12.9
Wooden sticks	47	11.3
Nail file	41	9.8
None of these	13	3.1

RESULTS

All participants (100%) were female. The 96 manicure/pedicure technicians interviewed had mean age of 34.6 (\pm 10.7) years, with 46.9% (n=45) aged between 31 and 50 years, followed by 44.8% (n=43) aged between 18 and 30 years, and 8.3% (n=8) were between 51 and 65 years old.

Regarding the length of time working in the profession, 45.8% (n=44) of the interviewees had 1 to 5 years serving in the profession, followed by 30.2% (n=29) with 6 to 10 years of career. Lower rates indicate length of professional activity up to one year, from 11 to 15 years, and over 15

years, representing 7.3% (n=7), 6.3% (n=6) and 10.4% (n=10), respectively.

About the knowledge of hepatitis and its prevention (Table I), 4.2% (n=4) had never heard of the condition. As for the conduction of specific examination for the disease, 40.6% (n=40) of the respondents answered positively. On the disease transmission routes, 26.0% (n=25) indicated as unknown and 74.0% (n=71) indicated them correctly, with most of these respondents pointing such routes as follows: blood (38.9%; n=77) and sexual intercourse (31.8%; n=63), in addition to pregnancy, urine and feces.

Table II - Distribution of the answers obtained from manicure technicians on biosecurity practices for the prevention of hepatitis. Maringá, PR, 2014.

Variables		n	%	
Reuse of material	Yes	58	60.4	
	No	38	39.6	
Personal use	No use	46	47.9	
	Used	50	52.1	
Handwashing	Always	45	46.9	
	Sometimes	26	27.1	
	Never	25	26.0	
Product used in handwashing	Water + soap	70	72.9	
	Alcohol	4	4.2	
	Water + soap / Alcohol	22	22.9	
Use of gloves	Always	8	8.3	
	Sometimes	40	41.7	
	Never	48	50.0	
	Hinders the service	50	61.0	
	Not to wear gloves	Not acquainted or lacking material	5	6.1
		Uncomfortable	26	31.7
Reasons	Cannot get adapted to it	1	1.2	
	Hurry	2	14.3	
	To wear gloves	Unknown clients	3	21.4
		Protection	9	64.3
Sterilization of the work tools	Always	53	55.2	
	Sometimes	17	17.7	
	Never	26	27.1	
	To sterilize	Removal of dirt and contaminants	52	98.1
		Finds it necessary	1	1.9
Reasons	Low supply of materials / Few customers	3	7.0	
	Not to sterilize	Difficulty in purchasing the equipment	29	67.4
		Insufficient time	11	25.6

As regards the recommended biosecurity techniques used in the prevention of hepatitis (Table II), 60.4% (n=58) reported reusing disposable materials (nail file and sticks) indistinctly between their clients and mate professionals. Handwashing was pointed by 46.9% (n=45) of respondents. Among the ones who use gloves, despite 61.0% (n=50) pointed out that they hamper the activities, for 64.3% (n=9) the main reason to use them is the protection that PPE offer to both professional and client. Materials sterilization is accomplished by 55.2% (n=53) of the technicians, representing the aim of removal of dirt and contaminants, for 98.1% (n=52) of them. Among those who do not employ the method, 67.4% (n=29) point the difficulty in buying the equipment as the justification.

About handwashing (Table III), a significant sample was evidenced (p=0.01078) regarding the answer “always” given to the said washing frequency in the age groups of 18 to 30 years (n=23) and 51 to 65 (n=4), whereas manicure technicians between 31 and 50 reported “never” washing their hands.

No significant association was demonstrated between the length of professional activity and the variables assessed (Table IV): ever heard about hepatitis (p=0.77025), reuse of disposables (p=0.42691), hand washing (p=0.32876), use of disposable gloves (p=0.33752), and materials sterilization (p=0.84443).

Table III - Analysis of the relationship between age range and knowledge of preventive measures for hepatitis indicated by the manicure/pedicure technicians. Maringá, PR, 2014.

Variables	Age range						p-value
	18 to 30 years		31 to 50 years		51 to 65 years		
	n	%	n	%	n	%	
Heard of hepatitis							
Yes	42	43.8	42	43.8	8	8.3	0.49234
No	1	1.0	3	3.1	0	0.0	
Submitted to diagnostic testing							
No	26	27.1	25	26.0	5	5.2	0.86919
Yes	17	17.7	20	20.8	3	3.1	
Reuse of disposable materials							
No	16	16.7	19	19.8	3	3.1	0.88387
Yes	27	28.1	26	27.1	5	5.2	
Handwashing							
Always	23	24.0	18	18.8	4	4.2	0.01078*
Sometimes	16	16.7	8	8.3	2	2.1	
Never	4	4.2	19	19.8	2	2.1	
Use of disposable gloves							
Sometimes	22	22.9	15	15.6	3	3.1	0.41682
Always	4	4.2	3	3.1	1	1.0	
Never	17	17.7	27	28.1	4	4.2	
Sterilization of materials							
Always	26	27.1	22	22.9	5	5.2	0.65946
Never	10	10.4	15	15.6	1	1.0	
Sometimes	7	7.3	8	8.3	2	2.1	

*p<0.05; significant by Fisher's exact test, considering a significance level of 5%.

Table IV - Analysis of the relationship between the length of professional activity and knowledge of preventive measures for hepatitis indicated by the manicure/pedicure technicians. Maringá, PR, 2014.

Variables	Length of professional activity										<i>p-value</i>
	Up to 1 year		1 to 5 years		6 to 10 years		11 to 15 years		Over 15 years		
	n	%	n	%	n	%	n	%	n	%	
Heard of hepatitis											
Yes	7	7.3	41	42.7	28	29.2	6	6.3	10	10.4	0.77025
No	0	0.0	3	3.1	1	1.0	0	0.0	0	0.0	
Submitted to diagnostic testing											
No	2	2.1	25	26.0	20	20.8	4	4.2	5	5.2	0.35476
Yes	5	5.2	19	19.8	9	9.4	2	2.1	5	5.2	
Reuse of disposable materials											
No	5	5.2	16	16.7	11	11.5	3	3.1	3	3.1	0.42691
Yes	2	2.1	28	29.2	18	18.8	3	3.1	7	7.3	
Handwashing											
Always	6	6.3	20	20.8	11	11.5	2	2.1	6	6.3	0.32876
Sometimes	0	0.0	15	15.6	7	7.3	2	2.1	2	2.1	
Never	1	1.0	9	9.4	11	11.5	2	2.1	2	2.1	
Use of disposable gloves											
Sometimes	6	6.3	17	17.7	11	11.5	2	2.1	4	4.2	0.33752
Always	0	0.0	3	3.1	3	3.1	0	0.0	2	2.1	
Never	1	1.0	24	25.0	15	15.6	4	4.2	4	4.2	
Sterilization of materials											
Always	5	5.2	24	25.0	14	14.6	3	3.1	7	7.3	0.84443
Never	1	1.0	14	14.6	8	8.3	2	2.1	1	1.0	
Sometimes	1	1.0	6	6.3	7	7.3	1	1.0	2	2.1	

$p > 0.05$; not significant by Fisher's exact test, considering a significance level of 5%.

DISCUSSION

Similar to the research conducted between 2010 and 2011 in the city of Arcos, MG, most respondents of this study were over 30 years old⁽¹⁾. Regarding the length of professional activity, it can be said that the results were the opposite of other work on occupational risks posed to beauty professionals in the city of Goiânia. In this regard, the authors concluded that most of the professionals interviewed exercises their profession with skill and consolidated knowledge⁽¹⁰⁾.

About the knowledge of hepatitis and its prevention, the current study obtained similar results to the survey with manicure and pedicure technicians in Itaúna, MG, whose purpose was to determine the knowledge of the risk of contamination with hepatitis B and the adoption of

biosecurity measures for prevention; in that research, 3.1% of the respondents had never heard of hepatitis B⁽⁶⁾.

The hepatitis indexes obtained in the present survey are similar to those found in a study conducted in São Paulo, SP with 100 manicure/pedicure technicians, which found that 8% were seropositive for hepatitis B and 2% for hepatitis C, totaling 10% seropositive professionals⁽³⁾. This results is divergent from the study conducted in the state of Rio Grande do Sul, which detected 3.6% positivity between 82 manicure technicians, characterizing low prevalence of the disease⁽¹¹⁾. The cited studies reported that, in Botucatu-SP, 4.3% to 5.5% of the manicure technicians were positive for hepatitis⁽³⁾.

The routes of transmission of the disease were displayed correctly by most of the professionals interviewed in this research. Blood was the mainly reported option.

Misconceptions relating to vertical transmission (from the mother) and the pregnancy itself were observed. The unfamiliarity with transmission is similar to the study in Itaúna-MG, in which 20.5% did not know the forms of transmission of the disease, while 79.5% said they knew them⁽⁶⁾.

The main issue with respect to the transmission of hepatitis virus is not only in the day-to-day practice of the health professionals and personal care, but also the heedlessness towards its prevention^(12,13).

Proper knowledge of the ways of transmission is important given that manicure technicians belong to a group with higher risk of exposure to HBV than the general population because of the possibility of contact with blood during the cosmetic procedure or when cleaning the working tools - nail pliers, nail clippers, scissors, nail picks, spatulas, among others⁽⁶⁾. This notion is demonstrated by most of the professionals interviewed in the current research.

A high number of professionals was still found reusing materials in the present research. Such practice of reuse was also adopted by 29.9% of participants in a study in Itaúna, MG⁽⁶⁾. The author reports that 95.3% indicate the use of individual kits containing pliers, knives, scissors/nail clipper, among others, thus avoiding materials to be shared. Sharing can represent a route of disease transmission, and the main concern is that an injury caused by a reused materials transmit infections. Therefore, these professionals must be aware of the risks associated with reusing disposables⁽¹⁴⁾. It is known that HBV virus, transmitter of hepatitis B, for instance, is highly resistant and able to survive for up to seven days in dried blood at room temperature⁽³⁾.

Low use of gloves as a protective measure was found in the sample selected for this research. These findings converge with the study in Arcos, MG, which points the use of gloves restricted to situations when the customer is known to be carrying some type of disease⁽¹⁾. The same authors, in 2012, showed that adherence to the use of gloves by manicure/pedicure technicians ranged between 5% and 20%, even though most were aware of the need for such PPE for their own protection⁽⁴⁾. Study in Jacareí, SP shows that 50% of the professionals reported wearing gloves while attending the customer, but gloves were reused and only discarded and changed when pierced, or were reused after being washed with soap and water and dried⁽¹⁴⁾. In Botucatu, it was found that 20% of manicure/pedicure technicians used disposable gloves, but only 5% were found using them at the moment of the interview⁽³⁾.

The use of gloves is recommended whenever there is a possibility of contact with blood, mucous membrane or non-intact skin, and for handling items or surfaces soiled with blood. Thus, the Ministry of Health developed a

leaflet for beauty professionals recommending the use of disposable gloves for each customer and the use of rubber gloves to carry out the cleaning of instruments, in order to minimize the risk posed by a possible accident with a piercing or cutting material, but these actions are neglected by the majority⁽⁶⁾.

The use of this PPE is regulated by SESA Resolution no. 204/2009, which provides the conditions for installation and operation of podiatry establishments. It establishes the adoption of single-use gloves, which should be discarded after use without neglecting the handwashing⁽¹⁵⁾.

The result obtained on handwashing diverges from other research conducted with manicure technicians, in which 83.3% reported complying with such practice between services provided to customers⁽¹⁾. Another study reported that 74% of respondents perform hand hygiene before and after each service; however, during the period in which the interviewer remained in their workplace, such measure was not adopted⁽³⁾.

Hands asepsis is the simplest and most important individual measure to reduce the risk of exposure to the virus, since it is through the hands that occurs the main mode of transmission of micro-organisms colonizing the most superficial layer of the skin, which may be easily removed by washing with soap and water⁽⁶⁾.

Beauty professionals recognize the importance of hand washing only as a personal care attitude, but not as a preventive measure against the infection; consequently, they do not report the realization of such activity between each client and before donning gloves⁽⁴⁾.

According to Resolution no. 204/2009 of the Secretariat of the State of São Paulo⁽¹⁵⁾, manicure/pedicure technicians should perform hygiene and antiseptics of hands and the client's skin prior to starting the procedures; make use of gloves, which must be discarded after use; promote the cleaning and/or sterilization of procedure materials in exclusive place, in an appropriate package containing sterilization date, expiry date, and name of the person responsible for sterilization; in addition to having operational protocols for each process. The waste generated should follow the determinations of ANVISA Resolution RDC 306/04.

On the reasons for sterilization of working materials, the majority of respondents in the current survey indicated correct answers, according to the Ministry of Health. Only sterilization eliminates all forms of microbial life⁽⁶⁾. The Manual of Articles and Surfaces Processing in Health Facilities⁽¹⁶⁾ indicates that prior to sterilizing the materials, these should be washed with water and mild detergent or soap, with the aid of a soft bristle brush to remove dirt and contaminants. Whatever the process to be submitted to,

every article should be considered “contaminated” without taking into account the amount of dirt present.

Among the manicure and pedicure technicians in Itaúna, MG, 83.5% reported using sterile materials for each customer⁽⁶⁾. In the same study, among the manicure technicians that do not use previously sterilized materials, 61.9% said they do not adopt this measure because each client has their own material.

The development of health education activities for these professionals is increasingly necessary because, if safety rules are not followed, risks can affect the health of workers and clients⁽⁷⁾.

During the activities, these professionals should make use of PPE - disposable gloves, disposable protective mask, safety goggles, disposable cap and light-colored apron⁽¹⁵⁾. Although the respondents have reported the use of gloves and the realization of handwashing, these practices were not observed during the research in the workplaces where manicure/pedicure technicians performed their activities.

One of the limitations found during this work concerns the scarcity of publications addressing the knowledge of and adherence to biosecurity recommendations by manicure/pedicure technicians, unlike the vast literature in health area.

It is necessary to carry out education activities for manicure/pedicure technicians on the importance of using PPE and proper sterilization of the materials used. Failure to perform these processes can lead to transmission of the virus via client/manicure technician and manicure technician/client, and also to their partners within their households.

Providing professional development to these professionals, as well as providing the exchange of knowledge among those involved, will decisively contribute to preventive actions in public health with regard to hepatitis.

CONCLUSION

The interviewed professionals lack knowledge about preventive practices and, therefore, do not meet the biosecurity standards for the prevention of hepatitis transmission. It is important to be attentive to the risk of household transmission associated with these materials, as the professionals in this sample reuse disposables, which might also be used by the general population.

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