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SOCIAL AND HYGIENIC RISK FACTORS FOR INFECTION WITH HUMAN PAPILLOMAVIRUS

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These data showed that as a result of the widespread increase in the incidence of human papillomavirus, the increase in its socio-economic significance and failures in the prevention of this disease, there is an intensification of research to develop a system of measures to reduce the risk of women contracting this infection. There is an opinion about the priority in this respect of sanitary agitation, the most accessible, economical and epidemiologically expedient method, since only with the activity of the population itself in the implementation of preventive measures can the desired result be achieved. Approbation of methods for the prevention of human papillomavirus and their epidemiological assessment showed that it should be based on the timely detection and treatment of patients with human papillomavirus with the obligatory conduct of the same work among their sexual partners, the systematic conduct of sanitary and propaganda work among the population on the main measures for the prevention of papillomavirus person. The assimilation of these measures by the population and their implementation can significantly limit the spread of the human papillomavirus among women.

Key words: *human papilloma virus, cervical cancer, social factors.*

The connection of the publication with planned research works. This work is a fragment of an ongoing dissertation for the degree of Doctor of Philosophy in medicine "Clinical and epidemiological aspects of Human Papillomavirus in the Republic of Azerbaijan".

Introduction. The high prevalence of human papillomavirus (HPV) and its relationship with diseases ranging from benign skin and mucous membrane conditions to the most common sexually transmitted infections (STIs) indicate its importance in the public health system. Among the more than 400 described types of papillomavirus, 218 are associated with infections in humans [1, 2, 3]. Its oncogenic potential is well known in some types of neoplasms and is enhanced in conditions of immunosuppression in an increasingly broad population, which jeopardizes the survival and quality of life of affected individuals. Human papillomavirus is the main cause of cervical cancer and its preceding lesions [4, 5, 6]. To date, more than 18 anogenital HPV are classified as oncogenic, including HPV 16, 18, 26, 31, 33, 35, 39, 45, 51, 52, 53, 56, 58, 59, 66, 68, 69, 73 and 82 [7, 8]. Although HPV 16, 18, 31 and 51 are common HPV genotypes, the pattern of HPV genotype distribution shows various regional differences.

The aim of the study was to study the influence of social and hygienic factors on the activation of the mechanism of transmission of human papillomavirus among women.

Object and methods of research. 1366 women were examined at the Oncology Clinic of the Azerbaijan Medical University to identify the prevalence of HPV among women of reproductive age. Written informed consent was obtained from all patients who participated in the study. Identification of the influence of socio-hygienic factors on the activation of the mechanism of HPV transmission was carried out by grouping the examined 232 women depending on the degree of material well-being, the level of hygienic culture and housing and communal conditions. The approbation of various methods of HPV prevention and its epidemiological assessment was carried out as follows. The above-mentioned 232 women with HPV were divided into 3 groups: married – 80 patients (34.5±3.0%), unmarried youth – 38 patients (16.4±2.2%), and unmarried adults, more often divorced – 114 patients (49.1±3.2%), and they found out the awareness of their sexual partners about the disease, namely the degree of information, termination of sexual intercourse, passing a diagnostic examination, receiving specific treatment. Statistical data processing was carried out using the Statistica 7.0 application software package using the standard statistical analysis package Excel 2013. Statistical methods included the estimation of the arithmetic mean (M), the standard error of the mean (m). The Student's t-test was used to assess the intergroup differences. The reliability of the difference in qualitative (alternative) indicators was assessed by the Pearson chi-squared criterion ($\chi 2$). The critical level of reliability of the null statistical hypothesis (about the absence of significant differences or factor influences) was assumed to be 0.05 ($p \leq 0.05$). An online calculator was used at – Social Science Statistics https://www.socscistatistics.com

The results of the study and their discussion. To assess risk factors, a retrospective case-control study was conducted among 312 surveyed women aged 18-44 years. Two groups were formed: group I – 232 women with detected high-risk human papillomavirus (HPV-BP) (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59 genotypes), group II – 80 women with negative HPV testing. Risk factors were assessed based on the survey data. The distribution by age groups is presented in **table 1**.

Table 1 – Age groups among women with positive and negative HPV test results

Age groups, years	I group (n=232)		II group (n=80)		OR	95% CI	χ 2	p
	Abs.	%	Abs.	%				<0,001*
18-24	16	6,9	11	13,9±3,9	0,96	1,38-3,23	0,01	0,920
25-29	111	47,8±3,3	18	27,5±5,0	2,12	0,56-1,63	12,80	0,920
30-34	41	17,8±2,5	27	33,6±3,1	0,96	0,55-1,64	0,01	0,086
35-39	37	15,9±2,4	16	20,0±4,5	0,59	0,31-1,08	2,92	0,034*
40-44	27	11,6±2,1	8	10,0±3,4	0,36	0,12-1,00	4,45	

Note: differences in scores were evaluated according to the Student's criterion, considering them reliable at p<0.05; differences in distribution were evaluated according to the criterion χ2.

Women aged 25–29 years are significantly more likely to be infected with HPV-BP (OR=2.12; p<0.001), whereas at the age of 18-24, HPV infection is less common (OR=0.96; p=0.034). No statistically significant differences were registered in other age groups (p>0.05). When analyzing socio-demographic indicators, it was found that women with HPV infection more often had secondary rather than higher education (OR=1.60; p=0.013), were unmarried (OR=1.13; p<0.001). Among bad habits, only alcohol consumption did not increase the risk of HPV infection (OR=1.03; p=0.813). Smoking was significantly more common among women of group I (OR=2.71; p=0.001 p<0.001, respectively). Separately, it was analyzed whether smoking cessation affects the reduction of the risk of HPV-BP infection. Some socio-demographic characteristics in the study groups are presented in **table 2**.

Table 2 – Socio-demographic indicators of the studied groups

Signs	I group (n=232)		II group (n=80)		OR	95% CI	χ 2	p
	Abs.	%	Abs.	%				
Education: Average	104	44,8±3,3	28	35,0±5,3	1,60	1,05-2,44	5,69	0,013
Higher	128	55,2±3,3	52	65,0±5,3	0,45	0,41-0,97	13,97	<0,001
Marital status: Married/ citizenship marriage	80	35,4±3,0	41	51,3±5,6	1,87	1,23-2,83	10,14	0,001
Not married	152	64,6±3,0	39	48,7±5,6	1,13	0,63-1,69	13,97	0.036
Bad habits: Smoking	55	23,7±2,8	16	20,0±4,5	2,71	1,52-4,83	3,23	<0,001
Alcohol consumption	32	13,8±2,3	9	11,3±3,6	1,03	0,63-1,89	0,03	0,815

Note: differences in scores were evaluated according to the Student's criterion, considering them reliable at p<0.05; differences in distribution were evaluated according to the criterion χ2.

When analyzing social and hygienic factors, we drew attention to a rather interesting phenomenon. First of all, we note that among the 232 women we examined for HPV, the proportion of women from families consisting of 1-2 people is quite high – 22.4±2.7% (52 women), but the highest proportion of families consisting of 3-5 people is 43.7±3.2% (100 women, t=8.54; p<0.001). With the subsequent increase in the number of families, their share decreases. Thus, the proportion of families consisting of 6-8 people is 19.5±2.6% (45 women, t=9.76; p<0.001), even less is the proportion of families consisting of 9-11 people – 13.0±2.5% (31 women, t=11.98; p<0.001) and least of all is the proportion of families consisting of more than 12 people – 2.0% (4 women), t=13.09; p<0.001), i.e., the larger the number of family members, the rarer their occurrence (ґ= –0.68±0.21; p<0.05).

In total, 1,366 people were analyzed, including 232 HPV patients (16.9±2.5%). According to the total data, the most patients were detected among persons having polygamous sexual relations – 8.2±0.7%, among persons having monogamous sexual relations, the number of patients was less – 6.4±0.6% (t=2.96; p<0.01) and the least of them were detected among persons without sexual relations – 1.2±0.2% (t=6.87; p<0.001). Timely detection of HPV patients and their effective treatment is the most powerful preventive measure, as it leads to the neutralization of the source of infection and prevents its further spread. Therefore, the mandatory treatment of sexual partners is considered the leading preventive measure.

Given the importance of this issue, we present the following studies. First of all, it was necessary to find out whether patients inform their partners about the presence of an infection, whether they offer to undergo an HPV examination and conduct appropriate treatment. Attention is drawn to the fact that among the patients, divorced people were most represented – 114 people (49.1±3.3%), these are already more mature people leading a free lifestyle, often with different sexual partners and, therefore, more at risk of HPV infection. Patients who were married were less represented, -80 people (34.5±3.1%; t=10.51; p<0.001), including persons also belonging to risk groups. And women who had not married were even less represented – 38 people (16.4±2.4%; t=4.92; p<0.001). A total of 84 (36.2±3.2%) women informed their sexual partners about the presence of the disease, 120 women (51.7±3.3% stopped having sex, 47 sexual partners (20.2±2.6 %) considered it necessary to undergo a diagnostic examination and 18.5±2.5 % of them were subjected to HPV detection specific treatment. If we consider that the possibility of infection of sexual partners is very high and this is one of the reasons for the widespread spread of HPV, then the obtained indicators of the survey of patients are extremely low in preventive terms, in particular, 65.0±3.1% of people were not aware of the presence of HPV in their sexual partners and were more likely to become infected and become a source of spread infections.

With such a high risk of infection of sexual partners, only 18.5±1.2% (43 people) received specific treat-

ment, which naturally cannot contribute to the prevention of HPV. Interestingly, for the above reasons, among patients who are married, the highest rate of their sexual partners passing a diagnostic examination is 36.2±3.2%, among patients who have not married, this indicator decreases to 25.0±3.2% (t=3.28; p <0.001) and reaches the lowest value among divorced patients – 11.4±5.4% (t=3.42; p<0.001). And as a consequence, in these groups of patients, the indicator of specific treatment of sexual partners decreases in the same sequence when HPV is detected in them – respectively 26,8±3,2%, 15,6±3,% (t=3.56; p<0.001) and 5.5±1.4 % (t=3.36; p<0.01). A generally recognized effective means of preventing sexually transmitted diseases, including HPV, is the use of individual protective devices, mainly condoms.Women's use of means to prevent unwanted pregnancy, they only answered the question – do their sexual partners use condoms and how often, since only this means can prevent the transmission of HPV during sexual intercourse. First of all, let's analyze the results of the survey among 232 women with HPV. To one degree or another, 106 (45.6±3.3%) HPV patients used condoms, which should be recognized as a very low indicator, especially since only 51 (21.9±2.7%) patients used them systematically. In different groups of patients, the frequency of condom use varies. Most of all, they are used by young people who have not married, since among them they are especially protected from unwanted pregnancy – 73.6±7.2%. For the same reason, condoms are used by patients who are married, although to a lesser extent – 47.5±5.6 % (t=3.29; p<0.001). They are even less used by unmarried women, more often divorced – 37.7±4.5% (t=4.56; p<0.001). It is this group that poses an epidemiological danger with respect to HPV, since they are characterized by promiscuity in sexual relations and frequent change of sexual partners. In this group, they are also protected from unwanted pregnancy, but only women take protective measures using various means (spirals, intravaginal and oral medications), which, for obvious reasons, cannot protect against HPV infection.

Epidemiologically, an important fact is revealed – the dependence of the incidence of HPV on the frequency of condom use. Thus, the most morbidity is confined to persons who do not use condoms during sexual intercourse – 54.4±3.3%. Among people who use condoms, but not regularly, the incidence is much lower – 23.7±2.8% (t=5.64; p<0.001). The lowest incidence was found among people who systematically use condoms – 11.6±2.1% (t=5.02; p<0.001), i.e. the problem of explaining to the population the need to use condoms for reliable prevention of sexually transmitted diseases, including HPV, is very acute.

In recent years, as a result of the widespread increase in the incidence of HPV, its increasing socio-economic importance and failures in the prevention of this disease, there has been an intensification of research to develop a system of measures to reduce the risk of infection of women with this infection. There is an opinion about the priority in this regard of sanitary agitation, the most affordable, economical and epidemiologically expedient method, since only with the activity of the population itself in the implementation of preventive measures, the desired result can be achieved. The conducted studies show the importance of proper organization of explanatory work for the organization and conduct of a survey of women for HPV. Epidemiological studies have made it possible to determine the influence of socio-hygienic factors on the activation of the mechanism of HPV transmission and to identify factors contributing to the transmission of infection among women.

Conclusions. The approbation of HPV prevention methods and their epidemiological assessment showed that it should be based on the timely detection and treatment of HPV patients with the mandatory conduct of the same work among their sexual partners, systematic sanitary and agitation work among the population on the main measures of HPV prevention. The assimilation of these measures by the population and their implementation can significantly limit the spread of HPV among women.

Prospects for further research. It is planned to develop methods for the detection and treatment of HPV patients, as well as the prevention of factors contributing to the transmission of infection among women.

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СОЦІАЛЬНО-ГІГІЄНІЧНІ ФАКТОРИ РИЗИКУ ІНФІКУВАННЯ ВІРУСОМ ПАПІЛОМИ ЛЮДИНИ

Сафарова Р. І.

Резюме. Метою дослідження було визначення впливу соціально-гігієнічних факторів на активацію механізму передачі вірусу папіломи людини серед жінок. Було обстежено 1366 жінок на базі Клініки Онкологія Азербайджанського медичного університету для визначення поширеності ВПЛ серед жінок репродуктивного віку. Визначення впливу соціально-гігієнічних факторів на активацію механізму передачі ВПЛ було проведено шляхом групування обстежених 232 жінок в залежності від ступеня матеріального благополуччя, рівня гігієнічної культури та житлово-побутових умов. 232 жінки з ВПЛ були розділені на 3 групи: заміжні – 80 хворих, молодь, що не була одружена – 38 хворих, неодружені дорослі, частіше розлучені – 114 хворих, а також визначили обізнаність їхніх статевих партнерів про захворювання.

Для оцінки факторів ризику було проведено ретроспективне дослідження випадок-контроль серед 312 жінок віком 18-44 роки. Було сформовано дві групи: I група – 232 жінки з виявленим вірусом папіломи людини високого ризику (ВПЛ-ВР) (16,18,31,33, 35,39,45,51,52, 56,58,59-й генотипи), II група – 80 жінок з негативним результатом ВПЛ-тестування. Оцінка факторів ризику була проведена за даними анкетування. Жінки у віці 25-29 років частіше були інфіковані ВПЛ-ВР (OR=2,12), тоді як у віці 18-24 роки ВПЛ-інфекція зустрічається рідше (OR=0,96). Більше за все хворих виявлено серед жінок, що мають полігамні статеві зв'язки – 8,2±0,7%, серед осіб, що мають моногамні статеві зв'язки хворих менше – 6,4±0,6%, найменша кількість хворих виявлена серед осіб, що не мають статевих зв'язків – 1,2±0,2%. Обов'язковість лікування статевих партнерів вважається провідним профілактичним заходом.

Апробація способів профілактики ВПЛ та їх епідеміологічна оцінка показали, що будуватися вона повинна на сучасному виявленні та лікуванні хворих ВПЛ з обов'язковим проведенням цієї ж роботи серед їх статевих партнерів, систематичному проведенні санітарно-агітаційної роботи серед населення щодо основних заходів профілактики ВПЛ. Засвоєння населенням цих заходів та їх виконання дозволяє суттєво обмежити поширення ВПЛ серед жінок.

Ключові слова: вірус папіломи людини, рак шийки матки, соціальні фактори.

SOCIAL AND HYGIENIC RISK FACTORS FOR INFECTION WITH HUMAN PAPILLOMAVIRUS

Safarova R. I.

Abstract. *Goal.* To study the influence of social and hygienic factors on the activation of the mechanism of transmission of human papillomavirus among women.

Methods. 1,366 women were examined at the Oncology Clinic of the Azerbaijan Medical University to identify the prevalence of HPV among women of reproductive age. Identification of the influence of socio-hygienic factors on the activation of the mechanism of HPV transmission was carried out by grouping the examined 232 women depending on the degree of material well-being, the level of hygienic culture and housing and communal conditions. 232 women with HPV were divided into 3 groups: married – 80 patients, unmarried youth – 38 patients, and unmarried adults, more often divorced- 114 patients, and found out the awareness of their sexual partners about the disease.

Results. To assess risk factors, a retrospective case-control study was conducted among 312 surveyed women aged 18-44 years. Two groups were formed: group I – 232 women with detected high-risk human papillomavirus (HPV-BP) (16,18,31,33,35,39,45,51,52,56,58,59 genotypes), group II – 80 women with negative HPV testing. Risk factors were assessed based on the survey data.

Women aged 25-29 years are more likely to be infected with HPV-BP (OR=2.12), whereas at the age of 18-24, HPV infection is less common (OR=0.96). Most of the patients were identified among persons with polygamous sexual relations – 8.2±0.7%, among persons with monogamous sexual relations, the number of patients was less – 6.4±0.6% and the least of them were identified among persons without sexual relations – 1.2±0.2%. Mandatory treatment of sexual partners is considered the leading preventive measure.

Conclusions. The approbation of HPV prevention methods and their epidemiological assessment showed that it should be based on the timely detection and treatment of HPV patients with the mandatory conduct of the same work among their sexual partners, systematic sanitary and agitation work among the population on the main measures of HPV prevention. The assimilation of these measures by the population and their implementation can significantly limit the spread of HPV among women.

Key words: human papillomavirus, cervical cancer, social factors.

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