

HEALTH LITERACY AND SOCIOECONOMIC CHARACTERISTICS OF YOUNG PEOPLE IN SERBIA AND THEIR INFLUENCE ON REPRODUCTIVE HEALTH AND SEXUAL BEHAVIOUR

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SUMMARY

Objectives: Having adequate level of health literacy is a very powerful tool of improving health. “Emerging adulthood” is described as a period between age of 18–25 years, characterized by changing life circumstances, developing personality and exploring possibilities. The aim of this study was to establish the relationship between health literacy and socioeconomic status of young adults in Serbia and their individual influence on the reproductive health and sexual behaviour.

Methods: This research was conducted as observational, cross-sectional study. We used STOFHLA to assess the health literacy level of young people and general information questionnaire for demographic, social and economic characteristics of respondents, health knowledge and behaviour in the area of reproductive health. Chi-square test was performed to assess the existence of association between categorical variables using the Statistical Package for the Social Sciences (SPSS).

Results: Results of our research found significant connection between levels of health literacy and age groups, marital status, but also connection with living in rural place. Socio-demographic factors and health literacy levels had significant impact on various aspects of sexual behaviour and reproductive health knowledge.

Conclusion: The importance of this research is reflected in its contribution to a clearer understanding of the impact of health literacy and socioeconomic status on the reproductive health of young people in Serbia, with the aim of improving public policies, health interventions and educational programmes, which would contribute to reducing health inequalities, improving health outcomes, and developing targeted educational initiatives.

Key words: reproductive health, health literacy, socioeconomic status, sexual behaviour, Serbia

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INTRODUCTION

In the late 1990s, health literacy as a term was first proposed with the purpose of describing how individuals can understand and use the information that are of a great importance for their own health and the health of their families. Among more than 250 different definitions existing in the literature, one of the most used definitions of health literacy defines “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (1).

Having adequate level of health literacy is a very powerful tool of improving health, and therefore the assessment of the health literacy is important nowadays. Although, it has so many demands, there is no best way to measure this complex capability because it is not depending on a few factors (2). Poor health

literacy is associated with poor health, higher mortality and poor utilization of health care but also with an increased cost, private spending and government spending. That is why many countries, e.g., USA, European Union countries, and China are including health literacy in a decision-making process when forming different health policies.

Many of factors were investigated, but a lot of them are in the process of proving their connections. The unclear and inconsistent interpretations of health literacy are projected to limit the development of valid and reliable measurements (3). Those measurements are crucial for bringing the attention to health literacy which can lead to the change of health systems and their approach to the different profiles of people with an aim to help them have the best health (4).

Studies mainly focus on assessing the health literacy of adult population, but there are not many studies focusing on a very

important and vulnerable group of the society – children and young adults. In this period of individual's life, the emotional, cognitive and physical development occurs that directly affects health-related behaviour (5, 6). Just like for the adults, different contributing factors can influence the health literacy where the socioeconomic determinants take one of the most important roles (7).

'Emerging adulthood' is described as period between age span from 18–25 years, characterized by changing life circumstances, developing personality and exploring possibilities (8, 9). In this period of life, many of these individuals use internet as the main source of health-related information, which are not always accurate (10). The subjects that are the most searched in this period of their life are focused on reproductive and sexual health. Sexual health is crucial for physical and mental health and wellbeing, and it is fundamental in the prevention of unwanted pregnancy and sexually transmitted diseases (STDs) among adolescents worldwide (11). In Serbia, between 1991 and 2016 there were on average 5,907 babies born by the mothers younger than 20 every year (12). Few studies focused on exploring the relationship between sexual behaviour and literacy and developed preventing programme for STDs and unwanted pregnancies during the COVID 19 pandemic (13). There is also a lot of prevention strategies available for sexually transmitted diseases in Europe, which can help educate the youth (14). Actions like this are proof that health literacy is increasingly recognized as the key factor of keeping the health of individuals protected.

The aim of this study was establishing the relationship between health literacy and socioeconomic status of young adults in Serbia and their individual influence on the reproductive health and sexual behaviour with main focus to highlight the importance of these factors in this period of the development of individuals because it can affect their health, which can be improved with right programmes and adequate education.

MATERIALS AND METHODS

This research was conducted as observational, cross-sectional study, in the period from February to May 2024 in the Health Centre "Dr Bosko Vrebalov" in Zrenjanin.

As instruments of the research the following questionnaires were used:

- Short Test of Functional Health Literacy in Adults (STOFHLA) – test of functional health literacy among adults (an abbreviated version of the questionnaire TOFHLA that consists of 36 parts assessing the ability to read and understand information from healthcare environment);
- General information questionnaire which referred to the demographic, social and economic characteristics of the respondents, and health knowledge and behaviour in the area of reproductive health.

The objectives and procedures of the research were communicated to the respondents before the start. Ethical standards are aligned with the international Declaration of Helsinki. In order to respect the privacy of research subjects and the confidentiality of information collected, all necessary steps were taken in accordance with the General Data Protection Regulation (GDPR). Signed informed consent for participation in the research was obtained from each respondent.

Participants of both sexes, not younger than 18 years and not older than 30 years were included in the study. Our focus group was young people with an aim to assess their reproductive knowledge and sexual behaviour/activity based on their health literacy levels and socioeconomic characteristics.

TOFHLA has been already culturally adapted to the Serbian language and showed good internal consistency (Cronbach's $\alpha=0.94$) (15). Perfect score on literacy test was 36 points, and it took 7 minutes to administer. Definition of health literacy levels and associated scores were as follows:

- Inadequate health literacy implied the impossibility of reading and understanding the text related to health (points between 0 and 16);
- Marginal health literacy refers to the difficulty in reading and understanding the text referred to health (points between 17 and 22);
- Adequate health literacy is the ability to read and understand most of the texts related to health (points between 23 and 36).

Questions about reproductive health and sexual behaviour included the following questions:

- Who is the first to ask when you have health problem?
- What is your sexual orientation?
- Are you sexually active?
- What was the age of your first sexual intercourse?
- What was the age of your partner?
- Did you use contraception when you had first sexual experience?
- What is the total number of your sexual partners so far?
- What is the number of your sexual partners in the last year?
- How often do you have sex?
- What type of contraception do you use most frequently?
- Did you or your partner have experience with unwanted pregnancy?
- Did you or your partner have experience with abortion?
- What is the most common source of information about health that you use?
- What is the most common sexually transmitted disease?
- What are the symptoms of chlamydia infection?
- Do you know how you can get chlamydia?
- Can chlamydia cause infertility?
- What cause HPV infection?
- Is there hepatitis vaccine?
- Is there HPV vaccine?
- Would you be interested in improving your knowledge about contraception and sexually transmitted diseases?

Following statistical analysis was performed: measures of central tendency (mean and median), the measures of variability (standard deviation) for continuous variables and categorical variables were presented as proportion/percentage share. Chi-square test was performed to assess the existence of association between categorical variables. Significance was noted when the p-value was less than 0.05. Post-hoc analysis (Bonferroni test) was performed to established significance between multiple groups. Statistical Package for the Social Sciences (SPSS), version 23 was used to perform these tests.

RESULTS

This study included 523 respondents. The respondents were young people on territory of Serbia, between 18 and 28 years of

age, males and females, with mean age 20.10 ± 1.52 . Considering health literacy level, the median score of STOPHLA test was 31.66 ± 3.50 with following percentages for each literacy group: inadequate level 6.9%, marginal level 26.2% and adequate level 66.9% among respondents. Socioeconomic characteristics of respondents can be found in Table 1.

The respondents answered the questions about their sexual activity and reproductive knowledge as follows: 58.5% of respondents answered that the first person to ask when health problem occurs is a doctor, 63% get the most information about health topics from health professional, and nearly one fifth from the internet. The highest percentage (93.5%) answered that they are heterosexually oriented, and 72.7% of respondents were sexually active with frequency of sexual activity more than once a week (31.7%). More than half of respondents had their first sexual experience after the age of 18, with mean age 17.51 ± 1.34 , with a partner who was older than 18 years (71.1%), with mean age 19.26 ± 2.51 . At the time of the first sexual experience 77.5% used contraception and the most used way of protection was a condom (71.2%). The highest percentage of respondents had between 1 and 4 sexual partners (mean 2.68), and in the last year roughly 78% of respondents had one sexual partner. Respondents in almost 99% have not experienced unwanted pregnancy or abortion. By the opinion of respondents, the most common sexually transmitted diseases were chlamydia and HPV virus (63%). They were able to recognize the most common symptoms of chlamydia and the way of transmission, but also the long-term health problems that chlamydia can cause. They were mostly good informed about condition that HPV cause but 68.7% of them were not informed

about existence of HPV vaccines; on the other hand they were informed about vaccine for hepatitis in 80% of cases. They were interested in improving their knowledge about contraception and sexually transmitted diseases in conversation with medical worker (60.2%) or through adapted education in school or faculty (24.7%).

Association between health literacy and socioeconomic characteristic of the respondents showed to be significant between the levels of health literacy and age groups ($p=0.05$) and marital status of respondents ($p<0.01$) (Table 1). Post-hoc analysis confirmed significant association between respondents of different age with health literacy, where respondents older than 20 had better adequate health literacy than younger ones ($p=0.018$). Looking at marital status association is confirmed between respondents that were in relationship and single respondents where respondents in relationship had more adequate levels of health literacy ($p=0.000$). Although it was not found by chi-square test, association was found between place of living and health literacy within respondents living in suburban and rural areas, showing that suburban had more adequate health literacy compared to rural respondents ($p=0.015$) (Table 2).

When considering association between health literacy and sex in the different questions about sexual activity and sexual education of respondents, significance was found within question of the first person to ask when health problem occurs, age of the partner with whom they had first sexual experience, number of sexual partners, and number of partners in the last year, most used contraception, and the ways of chlamydia transmission.

In case of association of age groups, significance was found within questions of sexual activity, age of the partner with whom

Table 1. Socioeconomic characteristics and health literacy levels of respondents

Variable	Descriptive statistics			Level of health literacy (%)			Chi-square test	
	Categories	n	%	Inadequate	Marginal	Adequate	Pearson χ^2 value	p-value
Sex	Male	238	45.5	9.2	26.9	63.9	4.225	0.12
	Female	285	54.5	4.9	25.6	69.5		
Age groups	Up to 20	403	77.1	7.7	28.0	64.3	5.800	0.05*
	Above 20	120	22.9	4.2	20.0	75.8		
Place of living	City	230	44.0	6.1	25.7	68.3	8.386	0.08
	Suburban	153	29.3	4.6	22.9	72.5		
	Village/rural	140	26.8	10.7	30.7	58.6		
Family type	Full family	421	80.5	6.9	26.1	67.0	2.655	0.85
	Separated	49	9.4	6.1	30.6	63.3		
	Single parent	49	9.4	8.2	24.5	67.3		
	Other	4	0.8	0.0	0.0	100.0		
Marital status	Married	17	3.3	0.0	35.3	64.7	21.534	<0.01*
	In relationship	268	51.4	6.3	17.9	75.7		
	Single	236	45.3	8.1	34.3	57.6		
Employment	Employed	44	8.4	6.8	27.3	65.9	0.029	0.99
	Unemployed	479	91.6	6.9	26.1	67.0		
Income	To 200 euros	255	48.8	6.7	25.1	68.2	0.391	0.82
	200 and more	268	51.2	7.1	27.2	65.7		

*Statistically significant values

Table 2. Post hoc analysis between categorical variables that showed significant association with literacy levels

Variable 1 (V1)	Variable 2 (V2)	Mean difference (V1-V2)	p-value	95% CI	
				Lower bound	Upper bound
Above 20 years	Under 20 years	0.2	0.018*	0.03	0.28
Suburban	Rural	0.2	0.015*	0.03	0.37
In relationship	Single	0.2	<0.001*	0.07	0.33

Bonferroni test; *statistically significant values

they had first sexual experience, number of sexual partners, frequency of sexual activity, the most common STD, and causes of HPV.

Place of living had associations with the person first to ask when health problem occurs, sexual orientation, sexual activity, number of sexual partners, most used contraception, unwanted pregnancy, information about health subjects, and transmission of chlamydia.

When considering association between health literacy and family type in the different questions about sexual activity and sexual education of respondents, significance was found with the person first to ask when health problem occurs, sexual orientation, frequency of sexual activity, most used contraception, abortion, subjects related to health, most common STD, and vaccine against HPV.

Marital status showed association with different questions about sexual activity and sexual education of respondents, significance was found with the person first to ask when health problem occurs, sexual activity, age of partner, number of sexual partners in the last year, frequency of sexual activity, types of contraception, information about health, most common STD, chlamydia as the cause of sterility, and HPV vaccination.

When looking at the association of employment significance was found with number of sexual partners, most used contraception, causes of HPV, and improvement of sexual knowledge.

Income showed association with the sexual orientation, age of first sexual experience, number of sexual partners, most used contraception, and information about health subjects.

Health literacy levels had significant association with several questions about sexual activity and sexual education of respondents, significance was found with sexual activity, number of sexual partners in the last year, ways of chlamydia transmission and causes of HPV infection (Table 3).

DISCUSSION

Young people worldwide stay at higher risk of sexually transmitted infections and unplanned pregnancies in comparison to the general population. Behaviour of adolescences highly influences their health and overall wellbeing in their later life, especially in the areas related to their sexual life and reproductive health. In this period, risk of different sexually transmitted infections and diseases and unwanted pregnancies can be greatly reduced with adequate education and prevention (16). Implementing health education in school curriculum has proved to have a significant effect on sexually-related health knowledge (17).

Almost half of all newly registered sexually transmitted diseases in USA occur among the people aged 15–25 years (18). Rates

of STIs have been rising for years in many countries, including Europe, with stagnation during the COVID-19 pandemic (19).

There are many factors which influence young people's health, sexual health and practice, such as education system, social media, friends, and adults (20). In our study, when young adults had a health issue, the first people they interact with were doctors, but one third of them still used other sources of information, such as internet, blogs, which may not be the best choice.

Study in adult population of Serbia identified significant association of health literacy with age and place of living to be one of the factors that strongly affect the reproductive health behaviour of woman (21). In our study, we got similar results among young individuals where age, place of living and marital status had association with health literacy levels. Elements that have been identified as the ones having strong association with sexual health literacy among young adults are socioeconomic status, place of living, education levels, LGBTIQ+ status, and others psychological issues along with alcohol and drug abuse (22). Place of living, family type and income were factors that had significant association with sexual orientation of our respondents.

Part of the family in the sexual health of children was very much discussed where literature found connection with good relationship of children with parents as a key factor for good sexual health in their youth life. Other factors that influenced this connection were siblings, birth order and also foster parented children and family abuse (23). Most of our respondents lived in full family and significant association was found with family type and source from which respondents got their information about health subjects, type of used contraception, knowledge about sexually transmitted diseases, and their sexual orientation.

Formal school education about sexual knowledge and condom availability programmes positively affected the sexual activities and decreased the sexually transmitted diseases (24, 25). Based on overall experience of our respondents, most of them had opinions that information about reproductive and health subjects should be improved, especially by the conversations with doctors, but almost one third thought that this information should be more introduced to them in the high school.

Most of high school children are not introduced to vaccination available for STD. Davies et al. found that interventions successfully improved student knowledge of HPV vaccination and understanding about HPV (26). In our research, 68.7% of respondents did not know about existence of this vaccination, although their knowledge about causes of HPV was not lacking, showing us the importance of prevention of HPV being more introduced. Family type and marital status of respondents influenced the most their knowledge about this vaccine.

The relationship between the first or early sexual encounters, sexual health, and risk-taking was observed and it was found that

Table 3. Relationship between question about sexual health knowledge/behaviour and socioeconomic variables and health literacy levels

Questions about sexual health/behaviour	Socioeconomic variables							Health literacy
	Sex	Age groups	Place of living	Family type	Marital status	Employment	Income	
First person to ask when health problem occurs	<0.01*	0.25	<0.01*	<0.01*	<0.01*	0.09	0.40	0.83
Sexual orientation	0.52	0.13	<0.01*	<0.01*	0.16	0.50	<0.01*	0.31
Sexual activity	0.55	<0.01*	<0.01*	0.49	<0.01*	0.47	0.22	<0.01*
Age of first sexual intercourse	0.94	0.95	0.16	0.09	0.44	0.10	<0.01*	0.55
Age of partner	<0.01*	0.04*	0.34	0.42	0.04*	0.26	0.50	0.06
Contraception during sex	0.17	0.61	0.79	0.34	0.60	0.80	0.12	0.67
Number of sexual partners	<0.01*	0.02*	<0.01*	0.06	0.01*	<0.01*	0.03*	0.46
Number of sexual partners, last year	<0.01*	0.46	0.51	0.49	<0.01*	0.15	<0.01*	<0.01*
Frequency of sex	0.41	0.26*	0.26	0.04*	<0.01*	0.10	<0.01*	0.84
Most used contraception	0.02*	0.11	0.03*	<0.01*	<0.01*	<0.01*	0.06	0.77
Unwanted pregnancy	0.75	0.51	0.05*	0.08	0.46	0.48	0.72	0.50
Abortion	0.89	0.28	0.09	0.02*	0.76	0.52	0.94	0.58
Information about health subjects	0.47	0.56	<0.01*	<0.01*	<0.01*	0.52	0.04*	0.76
Most common STD	0.19	<0.01*	0.08	0.03*	0.02*	0.86	0.95	0.63
Chlamydia – symptoms	0.80	0.65	0.21	0.40	0.74	0.31	0.42	0.32
Chlamydia – transmission	<0.01*	0.41	0.05*	0.10	0.36	0.17	0.90	0.04*
Chlamydia – sterility	0.59	0.78	0.32	0.57	0.01*	0.32	0.64	0.79
HPV causes	0.09	0.02*	0.13	0.71	0.32	0.03*	0.39	<0.01*
Hepatitis vaccine	0.10	0.73	0.22	0.10	0.42	0.35	0.17	0.22
HPV vaccine	0.10	0.32	0.45	0.03*	<0.01*	0.22	0.31	0.25
Improvement in sexual information	0.15	0.63	0.45	0.26	<0.01*	<0.01*	0.53	0.90

Chi-square test; *statistically significant values

younger man were more likely to start oral, anal and vaginal sex at the age of 19, that directly influenced the number of their sexual partners but due to lack of education about the oral and anal sex, they were at higher risk of getting sexually transmitted infection/disease (27). Although, the connection between sexes and health literacy of our respondents was not found, the significant association was found between age of respondents and age of the first sexual partner, number of sexual partners and most used contraception which is in line with the previously described results. Little less than a half of respondents had the first sexual intercourse before the age of 18, with partners with mean age of 19.

Study conducted by Jefferson et al. demonstrated that many young adults were unaware of the common types of sexually transmitted infections, symptoms, and potential complications (28). More than 60% of our respondents answered that the most common STDs were chlamydia and HPV virus and larger portion of them were informed about the symptoms and potential complications of these diseases.

Unintended pregnancy and abortion occurred most among unmarried young people. Factors influencing unintended pregnancies included a lack of awareness of modern contraceptives and limited access to sexual and reproductive health information (29, 30). Our research found strong association between literacy levels and marital status of young adults, while abortion was associated with family type and unwanted pregnancies with place of living.

Stigmatization associated with sexual health of adolescent and young people should be left in the past and their access to sexual health information needs to be improved and more diverse.

CONCLUSION

Results of our research found significant association between levels of health literacy and age groups, marital status, but also connection with living in rural place. Socio-demographic factors and health literacy levels had significant impact on various aspects of sexual behaviour and reproductive health knowledge. The importance of this research is reflected in its contribution to a clearer understanding of the impact of health literacy and socioeconomic status on the reproductive health of young people in Serbia, with an aim of improving public policies, health interventions and educational programmes, which would contribute to reducing health inequalities, improving health outcomes, and developing targeted educational initiatives, which has wider social, economic and political advantages and benefits.

Authors' Contributions

All authors contributed to conception, design, analysis and interpretation of the data; intellectually conceive and critically reviewed the manuscript. All authors agreed with the final version of the manuscript.

Conflicts of Interest

None declared

Adherence to Ethical Standards

The research protocols used in this research were approved by the Ethics Committee of the Health Centre in Zrenjanin, Serbia, No. 55/2.

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