

DOI: 10.7251/QOL2602073N

UDC: 616.98:578.825]:616.36-002

Original scientific paper

PUBLIC KNOWLEDGE OF INFECTIOUS MONONUCLEOSIS: A CROSS-SECTIONAL SURVEY IN THE REPUBLIC OF SRPSKA (B&H)

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Abstract: Infectious mononucleosis is a common viral disease, most frequently caused by the Epstein–Barr virus, predominantly affecting adolescents and young adults. Despite its high prevalence, misconceptions regarding disease etiology, transmission routes, and clinical manifestations remain widespread and may influence health-related behavior. The aim of this study was to assess the level of knowledge and awareness of infectious mononucleosis in the general population of the Republic of Srpska, with particular emphasis on disease etiology, transmission, symptom recognition, and prevention, from a health literacy perspective. A cross-sectional survey was conducted in October 2025 using an anonymous online questionnaire. The study included 225 participants aged 17–60 years. Descriptive statistical methods were applied, and differences in knowledge were analyzed according to basic sociodemographic characteristics. Although most respondents (82.7%) had heard of infectious mononucleosis, only 59.6% correctly identified the disease as viral in origin. Contact with saliva was recognized as the primary route of transmission by 65.3% of participants, while a substantial proportion reported incorrect transmission routes. Common symptoms such as fatigue and fever were widely recognized; however, specific clinically relevant manifestations, including splenomegaly and rash, were poorly identified. Women and younger respondents demonstrated higher levels of knowledge. The findings reveal important gaps in public knowledge of infectious mononucleosis, reflecting broader challenges related to health literacy. Targeted public health education focusing on accurate disease information and prevention may contribute to improved awareness, earlier recognition, and more appropriate health-related behavior.

Keywords: infectious mononucleosis, Epstein–Barr virus, public awareness, health literacy, cross-sectional study, prevention

INTRODUCTION

Infectious mononucleosis is an acute systemic viral infection most commonly caused by the Epstein–Barr virus, a ubiquitous human herpesvirus that infects the majority of the global population during childhood or adolescence (Cohen, 2015; Luzuriaga and Sullivan, 2010). While primary infection in early childhood is often asymptomatic, infection acquired during adolescence or early adulthood frequently results in the clinical syndrome of infectious mononucleosis, characterized by fever, lymphadenopathy, sore throat, and pronounced fatigue (Balfour et al., 2015; Dunmire et al., 2018).

The virus is transmitted primarily through contact with saliva, which explains the increased incidence of the disease among adolescents and young adults living in close-contact settings such as schools, dormitories, and households (Cohen, 2015). Although infectious mononucleosis is generally a self-limiting condition, complications such as hepatosplenomegaly, prolonged convalescence, and, in rare cases, splenic rupture may occur, making timely recognition and appropriate management clinically relevant (Luzuriaga and Sullivan, 2010).

From a public health perspective, infectious mononucleosis represents an important example of a common viral disease that is frequently misunderstood by the general population. Several studies have shown that viral infections are often perceived as bacterial in origin, which may lead to inappropriate expectations regarding antibiotic therapy and increased misuse of antimicrobial agents (Berkman et al., 2011). Inadequate understanding of transmission routes and symptomatology may further contribute to delayed healthcare seeking and suboptimal preventive behavior.

Health literacy, defined as the ability of individuals to access, understand, and apply health-related information, has been recognized as a key determinant of individual and population health outcomes (Nutbeam, 2000; Sørensen et al., 2012). Low levels of health literacy have been associated with poorer disease knowledge, reduced adherence to preventive measures, and less effective use of healthcare services (Berkman et al., 2011; Kickbusch et al., 2013). In the context of infectious diseases, insufficient health literacy may facilitate the spread of infection and increase the burden on healthcare systems.

In recent years, the internet and social media have become dominant sources of health intelligence for the general population. While these platforms provide rapid and widespread access to information, they also enable the dissemination of incomplete or misleading content, particularly regarding infectious diseases and their treatment (Eysenbach, 2008). Consequently, assessing population-level knowledge and awareness of common viral infections has become increasingly important for guiding public health education strategies.

Despite the wide geographical distribution of Epstein–Barr virus infection worldwide, data on public awareness of infectious mononucleosis remain limited, particularly in Southeast Europe. To date, no systematic assessment of population-level understanding of infectious mononucleosis has been conducted in the Republic of Srpska. Identifying knowledge gaps related to disease etiology, transmission routes, symptom recognition, and prevention is essential for the development of targeted educational interventions and evidence-based public health policies.

Therefore, the aim of this study was to assess the level of knowledge and awareness of infectious mononucleosis in the general population of the Republic of Srpska, with particular emphasis on disease etiology, routes of transmission, recognition of common and specific symptoms, and preventive measures. In addition, differences in knowledge according to basic sociodemographic characteristics were explored.

MATERIALS AND METHODS

STUDY DESIGN

A cross-sectional study was conducted to assess the level of public knowledge and awareness of infectious mononucleosis in the general population of the Republic of Srpska.

PARTICIPANTS

The study included a total of 225 participants of both sexes, aged between 17 and 60 years, randomly selected. Participation was voluntary, and all respondents provided informed consent prior to completing the questionnaire. Individuals younger than 17 years of age and those who did not complete the questionnaire in full were excluded from the analysis.

The sample consisted of 120 women (53.3%) and 105 men (46.7%). Participants were recruited from both urban and rural areas across the Republic of Srpska, enabling inclusion of individuals with diverse sociodemographic backgrounds.

QUESTIONNAIRE

Data were collected using a specifically designed anonymous online questionnaire created for the purpose of this study. The questionnaire consisted of 16 questions and was structured into five sections:

1. Sociodemographic characteristics (sex, age group, number of children, place of residence)
2. Previous awareness and experience with infectious mononucleosis
3. Knowledge of disease etiology and routes of transmission
4. Recognition of common and specific symptoms of infectious mononucleosis
5. Attitudes toward prevention and preventive measures

Most questions were of the closed-ended type, with predefined answer options. One question allowed respondents to provide additional information in an open-ended format. The questionnaire was distributed electronically via social media platforms and e-mail.

DATA COLLECTION

The survey was conducted in October 2025 using the Google Forms platform. The electronic format ensured anonymity and facilitated automatic data recording. Participants were informed about the purpose of the study and the exclusive use of collected data for research purposes. The questionnaire used in this study is provided as Supplementary material.

STATISTICAL ANALYSIS

Collected data were analyzed using descriptive statistical methods. Categorical variables were presented as frequencies and percentages, while continuous variables were expressed as mean values with standard deviations. Descriptive statistical methods were used to summarize the data. Differences in knowledge and awareness of infectious mononucleosis according to sex and age group were analyzed using the chi-square (χ^2) test. Statistical significance was set at $p < 0.05$. Statistical analyses were performed using Microsoft Excel (Microsoft Corp., Redmond, WA, USA).

RESULTS

SOCIODEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

A total of 225 respondents participated in the study. The mean age of participants was 28.9 ± 8.4 years. The largest proportion of respondents belonged to the 17–25 age group (43.1%), followed by those aged 26–35 years (30.2%). Women accounted for 53.3% of the sample, while men represented 46.7%. Most respondents resided in urban areas (68.4%), and the majority reported having no children (62.7%). Detailed sociodemographic characteristics are presented in **Table 1**.

Table 1. Sociodemographic characteristics of respondents (n = 225)

Characteristic	n	%
Sex		
Female	120	53.3
Male	105	46.7
Age group (years)		
17–25	97	43.1
26–35	68	30.2
36–45	39	17.3
46–60	21	9.4
Number of children		

None	141	62.7
One child	57	25.3
Two or more children	27	12.0
Place of residence		
Urban	154	68.4
Rural	71	31.6

AWARENESS OF INFECTIOUS MONONUCLEOSIS

Most respondents (82.7%) reported that they had previously heard of infectious mononucleosis. However, only 59.6% correctly identified the disease as being of viral origin. A substantial proportion of respondents either believed that the disease was bacterial (21.3%) or were uncertain about its etiology (19.1%).

Regarding sources of information, the internet and social media were the most frequently reported sources (45.2%), followed by formal education (28.5%). Healthcare professionals were cited as the primary source of information by only 16.1% of respondents.

Personal experience with infectious mononucleosis was reported by 14.7% of participants, while 22.2% stated that they knew someone who had previously been affected by the disease.

KNOWLEDGE OF TRANSMISSION ROUTES AND PREVENTION

Contact with saliva was correctly identified as the main route of transmission by 65.3% of respondents. Nevertheless, 27.1% incorrectly believed that infectious mononucleosis is transmitted via airborne droplets, and 7.6% reported that they did not know the route of transmission.

Most respondents (72.0%) believed that infectious mononucleosis can be prevented. The most commonly reported preventive measures included avoidance of sharing utensils and drinking glasses (61.8%), maintaining personal hygiene (54.2%), and strengthening the immune system (48.9%).

A detailed overview of respondents' knowledge and attitudes is presented in **Table 2**.

Table 2. Knowledge and awareness of infectious mononucleosis

Variable	Correct / affirmative response (%)
Heard of infectious mononucleosis	82.7
Correctly identified viral etiology	59.6
Correctly identified saliva contact as transmission route	65.3
Recognized fatigue as a symptom	83.1
Recognized fever as a symptom	78.2
Recognized enlarged lymph nodes	71.6
Recognized sore throat	68.0
Recognized splenomegaly	34.7
Recognized rash	22.7
Recognized loss of appetite	19.6
Believed prevention is possible	72.0

RECOGNITION OF SYMPTOMS

Recognition of common symptoms of infectious mononucleosis was relatively high. Fatigue and fever were the most frequently identified symptoms, followed by enlarged lymph nodes and sore throat. In contrast, specific clinical manifestations such as splenomegaly, rash, and loss of appetite were identified by fewer than one third of respondents.

Overall, only 28.4% of respondents correctly recognized all major symptoms of infectious mononucleosis. The mean number of correctly identified symptoms was 4.7 ± 1.9 out of a maximum of seven.

Differences in symptom recognition are illustrated in **Figure 1**.

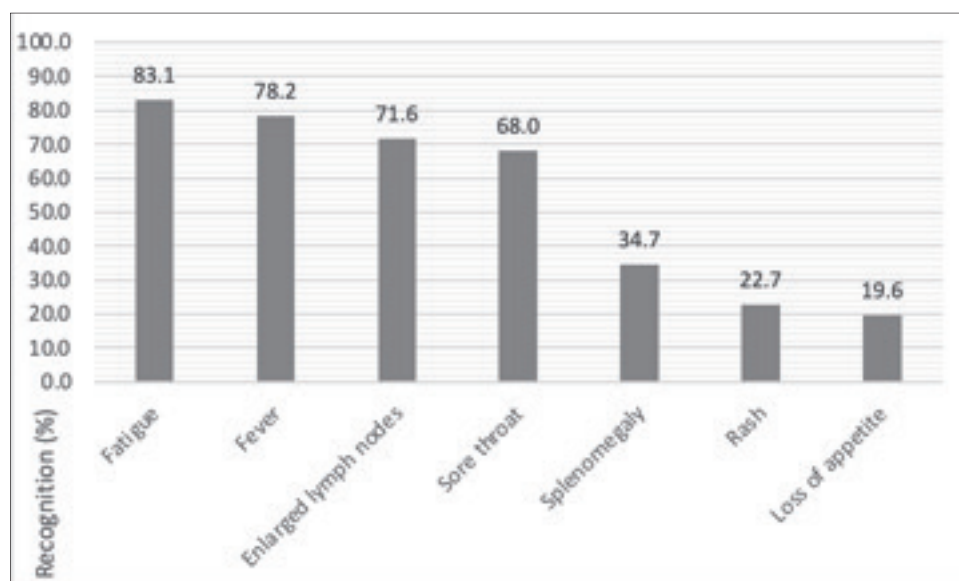


Figure 1. Recognition of symptoms of infectious mononucleosis among respondents

Legend: Figure 1 presents the proportion of respondents (%) who correctly identified individual symptoms of infectious mononucleosis. Fatigue (83.1%) and fever (78.2%) were the most frequently recognized symptoms, followed by enlarged lymph nodes (71.6%) and sore throat (68.0%). In contrast, specific clinical manifestations such as splenomegaly (34.7%), rash (22.7%), and loss of appetite (19.6%) were considerably less frequently identified.

DIFFERENCES ACCORDING TO SOCIODEMOGRAPHIC CHARACTERISTICS

Women demonstrated significantly better knowledge of infectious mononucleosis compared to men, particularly regarding symptom recognition and transmission routes ($p < 0.05$). Younger respondents (17–25 years) showed higher overall awareness than older age groups. Respondents with children displayed slightly better knowledge of preventive measures, although these differences were less pronounced.

DISCUSSION

The present study provides insight into public knowledge and awareness of infectious mononucleosis in the general population of the Republic of Srpska and identifies several gaps of clear relevance for public health practice. Although general awareness of the disease was relatively high, detailed understanding of its etiology, transmission routes, and specific clinical manifestations was limited.

A particularly important finding is that fewer than two thirds of respondents correctly identified infectious mononucleosis as a viral disease. Similar misconceptions regarding the etiology of common viral infections have been widely reported and are often associated with inappropriate expectations regarding antibiotic therapy (Berkman et al., 2011). Such misunderstandings represent a persistent challenge in antimicrobial stewardship and highlight the broader issue of insufficient health literacy in the general population.

Knowledge of transmission routes was moderate. While most respondents correctly recognized saliva contact as the primary route of transmission, more than one quarter believed that the disease is transmitted via airborne droplets. Confusion between different modes of transmission has been described in previous studies addressing public understanding of infectious diseases, particularly in the context of information obtained from non-professional sources (Eysenbach, 2008). This finding suggests that access

to information alone does not guarantee accurate knowledge.

Symptom recognition followed a similar pattern. Common manifestations such as fatigue, fever, sore throat, and lymphadenopathy were widely recognized, which is consistent with the classical clinical description of infectious mononucleosis (Luzuriaga and Sullivan, 2010; Balfour et al., 2015). In contrast, clinically significant signs such as splenomegaly and rash were poorly identified. This lack of awareness is particularly relevant, as unrecognized splenomegaly is associated with an increased risk of splenic rupture, especially among physically active individuals (Cohen, 2015).

Differences in knowledge according to sex and age observed in this study are consistent with findings from previous research on health literacy. Women and younger respondents demonstrated higher levels of awareness, which may reflect greater engagement with health-related information and higher exposure to digital media (Sørensen et al., 2012; Kickbusch et al., 2013). Similar patterns have been described in studies linking health literacy to sociodemographic factors and social determinants of health (Rowlands et al., 2018).

The dominant role of the internet and social media as sources of health information identified in this study reflects global trends in health information-seeking behavior. While these platforms enable rapid dissemination of information, they also facilitate the spread of inaccurate or misleading content. The relatively low reliance on healthcare professionals as information sources suggests an underutilized opportunity for structured patient education within primary healthcare systems.

From a broader public health perspective, the World Health Organization recognizes health literacy as a critical determinant of population health and a prerequisite for effective disease prevention and health promotion (World Health Organization, 2016). The findings of the present study support this view and indicate that improving health literacy related to infectious mononucleosis could contribute to earlier recognition of the disease, more appropriate preventive behavior, and reduced misuse of antibiotics.

Several limitations should be acknowledged. The online design of the survey may have introduced selection bias favoring younger and digitally literate individuals, and self-reported data may overestimate actual knowledge. Nevertheless, the study provides valuable population-based data and identifies clear targets for future public health education initiatives.

CONCLUSIONS

This study demonstrates that, although general awareness of infectious mononucleosis among the population of the Republic of Srpska is relatively high, substantial gaps persist in knowledge regarding disease etiology, transmission routes, and specific clinical manifestations. While common symptoms such as fatigue, fever, and sore throat are widely recognized, clinically important signs, including splenomegaly and rash, remain poorly understood.

The findings highlight misconceptions related to the viral nature of infectious mononucleosis and confusion regarding its mode of transmission, which may contribute to inappropriate preventive behavior and unrealistic expectations regarding antibiotic therapy. The dominant role of informal information sources, particularly the internet and social media, further emphasizes the need for reliable, evidence-based health communication.

Differences in knowledge according to sex and age indicate that targeted public health education should focus especially on men and older population groups, who demonstrated lower levels of awareness. Strengthening the role of healthcare professionals in patient education and integrating structured health literacy interventions into primary healthcare and educational settings may contribute to improved understanding and earlier recognition of the disease.

Overall, improving population-level health literacy related to infectious mononucleosis represents an important step toward more effective prevention, reduced risk of complications, and more rational use of healthcare resources.

Conflict of interest: *The authors declare no conflict of interest.*

APPENDIX

Questionnaire used in the study

Assessment of knowledge and awareness of infectious mononucleosis

This anonymous online questionnaire was designed to assess the level of knowledge and awareness of the general population regarding infectious mononucleosis. Completion of the questionnaire takes approximately 2–3 minutes. All responses are anonymous and will be used exclusively for research purposes.

Sociodemographic data

1. Gender:

☐ Male

☐ Female

2. Age group:

☐ 17–25 years

☐ 26–35 years

☐ 36–45 years

☐ 46–60 years

3. Number of children:

☐ None

☐ One

☐ Two or more

4. Place of residence:

☐ Urban

☐ Rural

Knowledge and awareness of infectious mononucleosis

5. Have you ever heard of infectious mononucleosis?

☐ Yes

☐ No

6. How did you learn about infectious mononucleosis?

☐ Internet / social media

☐ Formal education

☐ Healthcare professionals

☐ Family / acquaintances

☐ Other: _____

7. Have you personally had infectious mononucleosis?

- ☐ Yes
☐ No

8. Do you know someone who has had infectious mononucleosis?

- ☐ Yes
☐ No

9. What is the cause of infectious mononucleosis?

- ☐ Virus (Epstein–Barr virus)
☐ Bacteria
☐ Not sure

10. What is the main mode of transmission of infectious mononucleosis?

- ☐ Contact with saliva
☐ Airborne droplets
☐ Via contaminated objects
☐ Not sure

Recognition of symptoms**11. Is fatigue/exhaustion a symptom of infectious mononucleosis?**

- ☐ Yes
☐ No
☐ Not sure

12. Is fever a symptom of infectious mononucleosis?

- ☐ Yes
☐ No
☐ Not sure

13. Are enlarged lymph nodes a symptom of infectious mononucleosis?

- ☐ Yes
☐ No
☐ Not sure

14. Is sore throat a symptom of infectious mononucleosis?

- ☐ Yes
☐ No
☐ Not sure

15. Are enlarged spleen, rash, or loss of appetite symptoms of infectious mononucleosis?

- ☐ Yes
☐ No
☐ Not sure

Prevention

16. Which of the following preventive measures do you consider effective?

(Multiple answers allowed)

- ☐ Avoiding sharing utensils and drinking glasses
- ☐ Maintaining personal hygiene
- ☐ Strengthening the immune system
- ☐ Infectious mononucleosis cannot be prevented
- ☐ Not sure

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Recived: April 21, 2026

Revised: April 21, 2026

Accepted: April 21, 2026

