

Original article

## Intimate Partner Violence Among Female Croatian University Students

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### Abstract

**Aim:** Intimate partner violence (IPV) among university student populations is an important public health challenge with persistent negative consequences. This study aimed to explore the prevalence of IPV among female Croatian university students and to investigate possible risk factors for its occurrence.

**Methods:** This cross-sectional questionnaire study was conducted on a convenient sample of undergraduate and graduate female university students at the University of Osijek in April 2015.

**Results:** The overall prevalence of all forms of IPV in the studied population was 64.3%. Physical violence was reported by 3.3%, psychological violence by 59.8%, controlling behavior or coercive control as a special form of psychological violence by 40.2%, sexual violence by 4.8%, and economic abuse by 9.6% of female students. Sexual violence and economic abuse were more frequent among graduate female students ( $p < 0.001$  and  $p = 0.010$ , respectively). Female students who repeated the year of study were more frequently exposed to sexual violence ( $p = 0.005$ ). Overall IPV was more frequent among female students who studied within the field of humanities ( $p = 0.045$ ). Female students who studied within the field of humanities were more frequently exposed to physical violence, psychological violence, sexual violence, and economic abuse ( $p < 0.001$ ,  $p = 0.006$ ,  $p < 0.001$ , and  $p = 0.033$ , respectively).

**Conclusion:** IPV was highly prevalent among female Croatian university students and some sociodemographic and academic characteristics of those students seem to influence the observed prevalence of various IPV forms. Specific preventive programs adjusted to university settings are needed to successfully combat IPV in the studied population.

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## Introduction

Violence against women is one of the most significant violations of human rights and a widespread and serious public health challenge in modern societies. The aforementioned violence has significant negative short-term, medium-term, and long-term effects on the physical and mental health and well-being of women, children, and entire families. It is estimated that between 38% and 40% of femicides or murders of women worldwide are committed by their intimate partners (1). Violence by a spouse or a male intimate partner is the most prevalent form of violence against women in the world (2). Intimate partner violence (IPV) refers to any behavior of a current or former male intimate partner in the context of marriage, cohabitation, or any other formal or informal relationship or community, that causes physical, sexual, or psychological damage (1, 2). IPV includes physical abuse, such as hitting, slapping, kicking, and beating (physical IPV); nonphysical acts intended to upset a partner or harm their self-worth, such as shaming, name-calling, or intimidation (psychological IPV); other "controlling behaviors" such as isolating a person from their family and/or friends, monitoring their movements, restricting their access to information and services, and not allowing them to work outside of the home (so-called coercive control as a special form of psychological IPV); coercion, threats, or physical force to obtain unwanted sexual contact (sexual IPV); and economic or financial abuse (economic IPV) (1-3).

Recent studies have shown that dating violence among young people and IPV among young people is a very widespread phenomenon in the period of adolescence and young adulthood, i.e. in the period during which a large part of young people attend universities. The mentioned violence, as with IPV among adults, includes intentional forms of sexual, physical, and psychological abuse of one partner in an intimate relationship against another, and the various forms of violence mentioned often occur together. Students are actually very vulnerable in terms of IPV due to the very social environment in which they live and interact with

other students. Students live, work, and socialize with their peers, which is why they are very susceptible to their influence. Research has shown that students tend to adopt both positive and negative behaviors of their peers, such as excessive alcohol consumption, consumption of psychoactive substances, eating habits, and violent behavior in intimate relationships. IPV among young people often takes place in student dormitories, and student apartments outside the university campus, as well as at various social events and parties in catering establishments organized by various student associations (4-9).

Regarding the frequency of IPV in the student population, studies indicate a large variability in the prevalence of this violence, which ranges from 5.5% to a whopping 65.6%, depending on the country where the study was conducted. Physical violence was recorded in 17% to 45% of intimate relationships of students, sexual violence in 15% to 20% of their intimate relationships, and psychological and/or emotional violence in as many as 50% to 80% of intimate relationships in the student population (2, 9, 10).

Risk factors for the occurrence of all forms of IPV in the student population include excessive alcohol consumption, consumption of psychoactive substances, pre-existing mental health problems with which students already come to universities, low socioeconomic status, younger age of the victim, early sexual intercourse of the victim, experience of any form of violence, especially sexual violence during childhood, witnessing violence in an intimate relationship of parents in the primary family, disability of the victim, large age difference between the student and her intimate partner, dominantly patriarchal social attitudes that emphasize and justify the dominance of men over women in all aspects of their common coexistence and the fear of rejection or abandonment, i.e. the so-called anxiety related to bonding with an intimate partner (2, 7, 8, 11-18). Most studies over the past forty years point out that female students are mostly victims of violence in intimate relationships, while male students are mostly aggressors or perpetrators of various forms of violence against female

intimate partners, although more recent studies show that female students initiate and perpetrate violence against intimate partners just as often as male students. The latter mainly refers to psychological and/or emotional violence, while victims of sexual violence in the student population are still predominantly female students (2, 9).

In Croatia, the issue of IPV in the student population is very rarely investigated, and research among students at the University of Osijek conducted in 2015 found that a total of 67.7% of all students (both male and female) reported experiencing violence from an intimate partner sometime during life, whereby male students had significantly more positive attitudes towards intimate partner violence compared to female students (19, 20).

This study aimed to explore the prevalence of IPV among female Croatian university students and to investigate possible risk factors for its occurrence.

## Participants and Methods

### *Participants*

This study was cross-sectional. The research included 582 female students from the University of Osijek in Eastern Croatia during April 2015. The Ethics Committee of the Faculty of Medicine Osijek, Croatia (Ethical Approval Code: 2158-61-07-15-13) approved the research. Being the largest university in Eastern Croatia, the University of Osijek had a population of 16.065 students, 40.7% being males and 59.3% being females. A total of 800 questionnaires were randomly distributed to female sophomores from undergraduate or integrated undergraduate and graduate studies as well as to the ones studying in the first year of graduate studies or fourth year of integrated undergraduate and graduate studies. Participants were from all faculties within the university. Students were from different study years to explore the significance of study duration i.e. student life duration for the prevalence of IPV. The overall response rate was 73.8% (590/800). Eight questionnaires were

excluded from the study for being incomplete. The final sample of 582 answered questionnaires presented 6.1% of all female students from the University of Osijek and was a representative cross-faculty sample. The students' participation was voluntary and proceeded in lecture theaters immediately after the completion of a lecture. They were given an explanation about the purpose of the study and the protocol and the questionnaire was provided to those willing to participate and who signed the informed consent. Filling out the questionnaire took about 15 minutes, after which the participants were instructed to put them in a specially designed box that could not be opened or seen through which was positioned at the exit of the lecture theater.

Study participants' median age was 22 years (interquartile range from 21 to 23 years). The study sample was comprised of 60.7% of sophomores attending undergraduate or integrated undergraduate and graduate studies (with a median age of 21 years) and 39.3% of students attending the first year of graduate studies or the fourth year of integrated undergraduate and graduate studies (with the median age of 23 years) from all university faculties. Among the participants, there were 18.9% of those who repeated the study year and 81.1% of those who did not repeat it. There were 26.7% of participants from the field of biomedicine and natural sciences, 4.3% of participants from the field of technical sciences, 13.9% of participants from the field of biotechnical sciences, 45.5% of participants from the field of social sciences and 9.6% of participants from the field of humanities.

### *Methods*

A structured anonymous questionnaire used in the study was comprised of two parts. The first part of the questionnaire contained questions regarding sociodemographic data such as their age, sex, year of study, repetition of the study year, and study field. The second part of the questionnaire contained twenty-two questions regarding participants' lifetime experiences involving all forms of IPV, physical IPV, psychological IPV, controlling behaviors as a

special form of psychological IPV, sexual IPV, economic abuse, and experience of any form of IPV during circumstances when a female student or her partner were intoxicated with alcohol or psychoactive substances. The questions had simple "yes" or "no" answers.

### Statistical analysis

Statistical analyses were done using the IBM SPSS Statistical Package, version 22.0 (SPSS Inc., Chicago, IL, USA). The data distribution normality was confirmed by the Kolmogorov–Smirnov test, after which the methods of descriptive statistics were used to process the data. The categorical variables were described in absolute and relative frequencies, while the numerical variables were described as median and interquartile ranges. The  $\chi^2$ -test and Fisher exact test were used for the comparison of categorical variables between the groups. In all statistical analyses, two-sided p-values of 0.05 were considered significant.

## Results

The study revealed that the lifetime prevalence of all forms of IPV in the studied population of female students at the University of Osijek was 64.3%. Considering the lifetime experiences of various forms of IPV, there were 3.3% of students who reported experience of physical IPV, 59.8% of students who reported experience of

psychological IPV, 40.2% of students who reported experience controlling behaviors, 4.8% of students who reported experience of sexual IPV and 9.6% of students who reported experience of economic abuse. Besides that, 5.7% of students reported that they during their lifetime experienced any form of IPV in circumstances when the female student or her partner were intoxicated with alcohol while 1.2% of students reported that they during their lifetime experienced any form of IPV in circumstances when the female student or her partner were intoxicated with psychoactive substances.

There was no statistically significant difference in the frequency of any form of IPV in female Croatian university students considering their year of study ( $p=0.744$ ). The study also did not find statistically significant differences in the frequency of physical IPV, psychological IPV, and controlling behaviors among study participants considering their year of study ( $p=0.092$ ,  $p=0.990$ , and  $p=0.595$ , respectively). In contrast to aforementioned results, the present study showed that female students attending the first year of graduate studies or the fourth year of integrated undergraduate and graduate studies more frequently experienced sexual IPV ( $p<0.001$ ) (Table 1) as well as economic abuse ( $p=0.010$ ) (Table 2) in comparison to female students attending the second year of undergraduate or integrated undergraduate and graduate studies.

**Table 1. Lifetime experience of sexual IPV in study participants according to their year of study**

		Sexual IPV N (%)		p*
		No	Yes	
Year of study	2 <sup>nd</sup> year of undergraduate or integrated undergraduate and graduate studies	346 (98.0)	7 (2.0)	<0,001
	1 <sup>st</sup> year of graduate studies or 4 <sup>th</sup> year of integrated undergraduate and graduate studies	208 (90.8)	21 (9.2)	
Total		554 (95.2)	28 (4.8)	

\*  $\chi^2$ -test; N-number of study participants

**Table 2. Lifetime experience of economic abuse in study participants according to their year of study**

		Economic abuse		p*
		N (%)		
		No	Yes	
Year of study	2 <sup>nd</sup> year of undergraduate or integrated undergraduate and graduate studies	328 (92.9)	25 (7.1)	0.010
	1 <sup>st</sup> year of graduate studies or 4 <sup>th</sup> year of integrated undergraduate and graduate studies	198 (86.5)	31 (13.5)	
Total		526 (90.4)	56 (9.6)	

\*  $\chi^2$  2-test; N-number of study participants

The study did not find a statistically significant difference in the frequency of any form of IPV in female Croatian university students based on the repetition of the year of study ( $p=0.241$ ). The study also did not find statistically significant differences in the frequency of physical IPV, psychological IPV, controlling behaviors, and economic abuse among study participants based on the repetition of the year of study ( $p=0.227$ ,  $p=0.259$ ,  $p=0.702$ , and  $p=0.881$ , respectively). However, the present study revealed that female students who repeated the

year of study more frequently experienced sexual IPV ( $p=0.005$ ) (Table 3) in comparison to female students who did not repeat the year of study.

The present study revealed that all forms of IPV were more frequent among female students who studied within the scientific field of humanities ( $p=0.045$ ) (Table 4).

**Table 3. Lifetime experience of sexual IPV in study participants according to the repetition of the year of study**

		Sexual IPV		p*
		N (%)		
		No	Yes	
Repetition of the year of study	No	455 (96.4)	17 (3.6)	0.005
	Yes	99 (90.0)	11 (10.0)	
Total		554 (95.2)	28 (4.8)	

\*  $\chi^2$  2-test; N-number of study participants

**Table 4. Lifetime experience of any form of IPV in study participants according to the field of science of attended studies**

		Any form of IPV N (%)		p*
		No	Yes	
The field of science of attended studies	Biomedicine and natural sciences	63 (40.6)	92 (59.4)	0.045
	Technical sciences	10 (40.0)	15 (60.0)	
	Biotechnical sciences	28 (34.6)	53 (65.4)	
	Social sciences	97 (36.6)	168 (63.4)	
	Humanities	10 (17.9)	46 (82.1)	
Total		208 (35.7)	374 (64.3)	

\*  $\chi^2$  2-test; N-number of study participants

The study did not find a statistically significant difference in the frequency of controlling behaviors based on the student's field of science ( $p=0.411$ ). Female students who studied the

humanities were more frequently exposed to physical violence, psychological violence, sexual violence, and economic abuse ( $p<0.001$ ,  $p=0.006$ ,  $p<0.001$ , and  $p=0.033$ , respectively) (Table 5-8).

**Table 5. Lifetime experience of physical IPV in study participants according to the field of science of attended studies**

		Physical IPV N (%)		p*
		No	Yes	
The field of science of attended studies	Biomedicine and natural sciences	154 (99.4)	1 (0.6)	<0.001
	Technical sciences	23 (92.0)	2 (8.0)	
	Biotechnical sciences	80 (98.8)	1 (1.2)	
	Social sciences	258 (97.4)	7 (2.6)	
	Humanities	48 (85.7)	8 (14.3)	
Total		563 (96.7)	19 (3.3)	

\*Fisher exact test; N-number of study participants



**Table 6. Lifetime experience of psychological IPV in study participants according to the field of science of attended studies**

			Psychological IPV N (%)		p*
			No	Yes	
The field of science of attended studies	of	Biomedicine and natural sciences	75 (48.4)	80 (51.6)	0.006
		Technical sciences	11 (44.0)	14 (56.0)	
		Biotechnical sciences	32 (39.5)	49 (60.5)	
		Social sciences	105 (39.6)	160 (60.4)	
		Humanities	11 (19.6)	45 (80.4)	
Total			234 (40.2)	348 (59.8)	

\*  $\chi^2$ -test; N-number of study participants**Table 7. Lifetime experience of sexual IPV in study participants according to the field of science of attended studies**

			Sexual IPV N (%)		p*
			No	Yes	
The field of science of attended studies	of	Biomedicine and natural sciences	152 (98.1)	3 (1.9)	<0.001
		Technical sciences	23 (92.0)	2 (8.0)	
		Biotechnical sciences	75 (92.6)	6 (7.4)	
		Social sciences	258 (97.4)	7 (2.6)	
		Humanities	46 (82.1)	10 (17.9)	
Total			554 (95.2)	28 (4.8)	

\*Fisher exact test; N-number of study participants

**Table 8. Lifetime experience of economic abuse in study participants according to the field of science of attended studies**

			Economic abuse N (%)		p*
			No	Yes	
The field of science of attended studies	of	Biomedicine and natural sciences	141 (91.0)	14 (9.0)	0.033
		Technical sciences	23 (92.0)	2 (8.0)	
		Biotechnical sciences	70 (86.4)	11 (13.6)	
		Social sciences	247 (93.2)	18 (6.8)	
		Humanities	45 (80.4)	11 (19.6)	
Total			526 (90.4)	56 (9.6)	

\*Fisher exact test; N-number of study participants

## Discussion

The present study revealed a rather large prevalence of female university students who had experienced any form of IPV during their lifetime and the determined prevalence is comparable with the results of different similar studies (2, 9, 10, 17, 21-24). The present study showed that 3.3% of female students from the University of Osijek reported experience of physical IPV, which is almost identical to the prevalence of experienced physical IPV of 3.37% that was found among Croatian female students from the University of Mostar (9). The prevalence of physical IPV discovered in this study was lower than that found in other similar studies conducted in Spain, Nigeria, and Kenya (17, 22, 25, 26). The prevalence of psychological IPV (59.8%) found in this study is higher than the prevalence among Croatian female students from the University of Mostar, female students from Nigeria and Kenya (9, 22, 25), similar to the prevalence of this form of IPV found among students from Spain (17) and lower than the prevalence of this form of IPV found in another study in Nigeria (26). Considering sexual IPV the prevalence found in this study is almost six times higher than the prevalence of this form of IPV discovered among Croatian female students from the University of Mostar (9). However, the determined prevalence of sexual IPV in this study (4.8%) is much lower than the prevalence of this form of IPV found among students in Spain, Kenya, and Nigeria (17, 25, 26). The studies on economic abuse among female university students are rare, however, one study recently conducted among female community college students in the USA found that 44% of the students reported experiencing at least one economic abuse tactic over the past year (27). Considering the latter study, one can presume that the lifetime prevalence of economic abuse discovered in this research (9.6%) can be considered lower than the cited one.

The present study did not confirm that the intoxication of the victim or abusive partner with alcohol or psychoactive substances was an important risk factor for the occurrence of any form of IPV in the study population because,

according to the results, 5.7% of students reported that they during lifetime experienced any form of IPV in circumstances when female student or her partner were intoxicated with alcohol while 1.2% of students reported that they during lifetime experienced any form of IPV in circumstances when female student or her partner were intoxicated with psychoactive substances. The aforementioned findings are in contrast with other studies conducted elsewhere which all confirm that alcohol or psychoactive substances abuse were very important risk factors for the occurrence of IPV in university setting (2, 8, 12, 16, 21, 22, 25, 28) but are similar to the study conducted by Musa et al. that also confirmed how neither the use of alcohol, marijuana, nor other drugs was a predictor of IPV in university students (29).

Almost half of IPV survivors experienced their first abusive relationship at the university age, i.e. between 18 and 25 years (30). It has been noticed that there are some differences between established prevalences of IPV considering the year of study and because of that it is important to study the rates of IPV in undergraduate and graduate students (29). The present study did not find significant differences in the frequency of any form of IPV in study participants as well as in the frequency of physical IPV, psychological IPV and controlling behaviors among study participants considering their year of study and this finding is similar to the findings of study conducted by Musa et al. (29) but it is opposite to the results of the study done by Umana et al. which revealed that undergraduate students were at higher risk for experiencing IPV than graduate and postgraduate students (22). Although undergraduate students are often emphasized as an especially vulnerable group considering the IPV, including sexual IPV (31) this study revealed that graduate female students were significantly more exposed to sexual IPV in comparison to undergraduate female students included in this survey. The study by McMahon et al. conducted in the USA also confirmed that graduate female students are especially vulnerable to sexual IPV in comparison to undergraduate students (31). One frequently hidden or "invisible" form of IPV within intimate



relationships is economic or financial abuse (33). Attention to this form of IPV is very important because economic stability is a social determinant of health that significantly influences the physical and mental health and safety of IPV survivors and because of that studies that ignore economic violence miss an important factor (34, 35). Very little is known about university students' experiences of economic abuse since only a few studies explore this important issue. Available studies have suggested that some university students experience economic abuse, and these experiences consist of economic abuse tactics that target the student's ability to obtain or complete their educational pursuits (27, 36, 37). Considering the economic abuse, the present study further discovered that graduate female students were significantly more exposed to this form of IPV in comparison to the undergraduate Croatian female students included in this study. To the best of our knowledge this is the first study that explores the differences in the prevalence of economic abuse between undergraduate and graduate female students and because of that it is hard to compare our results with similar studies. However, the explanation for the revealed differences possibly lies in the fact that among the graduate students, there is a much larger proportion of those who are employed since they finished undergraduate studies and are more likely to pursue careers in their chosen profession while continuing with education in the graduate level of studies, thus having larger personal incomes found themselves in greater risk for economic abuse from a violent intimate partner.

A previous study among Croatian university students showed that low academic achievement measured through the repetition of the year of study poses a significant risk factor for alcohol abuse in the university student population (38). Following this analogy this study confirmed that female students who repeated the year of study were more frequently exposed to sexual IPV by their intimate partners in comparison to students who did not repeat the study year. Recent studies have confirmed that the self-esteem of students may be significantly

associated with their academic performance, meaning that it is quite possible that female students with low academic achievement measured through the repetition of the year of study have lower self-esteem in comparison to their peers who did not repeat the year of study (39,40). On the other hand, a recent study among emerging adults in France demonstrated that low self-esteem appears to be a factor of vulnerability to sexual IPV (41). Considering the aforementioned facts from different studies conducted among university students one can explain the result of this study concerning the repetition of the year of study as a risk factor for sexual IPV among study participants.

The present study revealed that overall IPV as well as physical violence, psychological violence, sexual violence, and economic abuse were all more frequent among female students who studied within the field of humanities. This finding is very interesting, but it is difficult to compare obtained results with other similar studies because, to the best of our knowledge, this was the first study that examined the prevalence of experienced IPV among university students according to their chosen field of study. However, there are several possible explanations. First, several studies have explored possible group differences in the Big Five personality traits between students in different academic majors and found out that there are significant personality group differences with some general trends such as psychology and arts/humanities students scored high on Agreeableness and Neuroticism, arts/humanities students scored low on Conscientiousness, psychology and arts/humanities students scored high on Openness (42, 43). The aforementioned facts are rather important since it is well-established that personality traits are associated with aggressive behavior and may enhance or inhibit aggressive moods and actions. Openness, agreeableness, and neuroticism are related to bold emotions and physical aggression while conscientiousness has significantly and positively correlated with the gray matter volume in the right inferior frontal gyrus, which has revealed the relationship between

personality traits and emotion regulation (44, 45). Therefore, the dominant personality traits of students studying in the humanities field of science can possibly predict individuals with a higher risk of IPV i.e. explain the results of the present study concerning the interconnection between the field of study and determined prevalence of overall IPV and its various forms. A second possible explanation for the obtained results lies in fact, that, according to one previous study among Croatian university students regarding their attitudes toward IPV, students studying within the field of humanities together with the students studying within the field of biomedicine and health sciences were less likely to have positive attitudes toward IPV in comparison to students studying in other field of science (20), because of that it is possible that female students studying in the field of humanities in this study were more prone to reporting their IPV experiences.

Although this study has several strong points mentioned earlier, it also has some limitations, therefore its results should be interpreted with caution. First, there is a potential for self-report bias, which we reduced by conducting an anonymous study. Furthermore, since the study included students from only one university, it cannot be generalized with certainty that the results are applicable at the national level. However, this study raised some new questions regarding the associations between personality traits and risk for IPV in Croatian university students that should be further investigated in future studies. Besides that, the study reveals

the need to examine self-esteem among the university student population and its association with the risk of IPV as well as the need to investigate more deeply the economic abuse as an often-hidden form of IPV in vulnerable university student population.

## Conclusion

The present study revealed that IPV was highly prevalent among female Croatian university students while some sociodemographic and academic characteristics of those students seem to influence the observed prevalence of overall IPV and its various forms. Bearing in mind that unidentified incidents of IPV and unreported incidents of IPV may interfere with IPV prevention efforts at the universities it is necessary to educate students and teachers about this emerging public health issue. Besides that, in designing the preventive measures that are needed to successfully combat IPV in the studied population one should consider the various number of specific risk factors for IPV that are unique to the occurrence of this type of violence in the university settings.

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**Competing interests.** None to declare.

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## Intimno-partnersko nasilje među hrvatskim studenticama

### Sažetak

**Cilj:** Nasilje među intimnim partnerima (IPN) unutar studentske populacije važan je javnozdravstveni izazov s trajnim negativnim posljedicama. Ovo istraživanje imalo je za cilj istražiti prevalenciju IPN-a među studenticama hrvatskih sveučilišnih studija te istražiti moguće čimbenike rizika za njegovu pojavu.

**Metode:** Ovo presječno istraživanje provedeno je na prigodnom uzorku studentica preddiplomskog i diplomskog studija Sveučilišta u Osijeku u travnju 2015. godine.

**Rezultati:** Ukupna prevalencija svih oblika IPN-a u ispitivanoj populaciji bila je 64,3 %. Fizičko nasilje prijavilo je 3,3 %, psihičko nasilje 59,8 %, kontroliranje ponašanja ili prisilnu kontrolu kao poseban oblik psihičkog nasilja 40,2 %, seksualno nasilje 4,8 %, a ekonomsko zlostavljanje 9,6 % studentica. Seksualnom nasilju i ekonomskom zlostavljanju češće su bile izložene studentice diplomskih studija ( $p < 0,001$  i  $p = 0,010$ ). Studentice koje su ponavljale godinu studija bile su češće izložene seksualnom nasilju ( $p = 0,005$ ). Općenito, IPN je bio učestaliji među studenticama koje su studirale unutar područja humanističkih znanosti ( $p = 0,045$ ). Studentice koje su studirale u području humanističkih znanosti bile su češće izložene fizičkom nasilju, psihičkom nasilju, seksualnom nasilju i ekonomskom zlostavljanju ( $p < 0,001$ ,  $p = 0,006$ ,  $p < 0,001$ , odnosno  $p = 0,033$ ).

**Zaključak:** IPN je bio vrlo raširen među hrvatskim studenticama i čini se da neke sociodemografske i akademske karakteristike tih studentica utječu na opaženu prevalenciju različitih oblika IPN-a. Za uspješnu borbu protiv IPN-a u proučavanoj populaciji potrebni su specifični preventivni programi prilagođeni sveučilišnom okruženju.