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Sexual Inviolability of Minors in Central Kazakhstan: A Forensic Medical Analysis

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Abstract

BACKGROUND: Child sexual abuse is a social phenomenon that requires special attention from society, as it leads to the suffering of the most vulnerable part of the world's population. Child sexual abuse around the world not only persists, but also continues to grow, despite the active measures of the world community against it. Taking into account the high latency of crimes against sexual inviolability and sexual freedom of the person, measures for their detection and prevention are of particular relevance. All this requires constant monitoring of the current situation not only in the world or in the country, but also in each region of the country separately. Forensic medical examination of victims of sexual violence plays an important role in the analysis of the situation on this problem, not only in the legal, but also in the medical aspect.

AIM: Analysis of quantitative and qualitative indicators of crimes against the sexual inviolability of minors on the territory of Central Kazakhstan for the formation of indicators for assessing the current situation in the region and recommendations for the prevention of these types of crimes.

METHODS: A retrospective analysis of the situation on the number and structure of sexual crimes committed against children from 2018 to 2021 was carried out, and their dynamics was studied. There were investigated 1252 forensic medical examinations on cases of sexual crimes against the sexual inviolability of the person on the territory of Central Kazakhstan. Methods of applied statistical analysis were used to analyze obtained results.

RESULTS: A detailed analysis made it possible to assess the structure and peculiarities of sexual crimes committed against children on the territory of Central Kazakhstan over the specified period of time. The number of sexual crimes against minors in the region is increasing every year. Statistically significant age characteristics of victims and specific indicators characterizing the socio-psychological aspects of sexual crimes in the region were revealed. It has been established that in most cases the aggressor is part of the victim's family or is very close to it. The analysis of the age structure of children showed that boys from 6 to 14 years old and girls over 14 years old are more likely to become victims. In the studied territory, the number of sexual assault of children is more often committed by one person, often known to them, and in most cases occurs in enclosed spaces than on the street.

CONCLUSION: The progressive growth of crimes against the sexual inviolability of children in the region requires strengthening measures to improve legal means of countering sexual crimes against minors. A detailed study of the issue made it possible to identify lacks (organizational, tactical, and diagnostic) and give the forensic medical examination of sexual conditions a qualitatively new level. The strategy of fight against sexual crimes against minors should be based on active preventive work.

Introduction

Crimes against the life, health, sexual inviolability, and sexual freedom of minors are a socially dangerous phenomenon and represent one of the most dangerous forms of antisocial behavior. At present, the problems of child abuse, one of which is sexual violence, are becoming more and more urgent. Child sexual abuse can take various forms: Incest, forced prostitution, pornography, "date rape," peer sexual abuse, and sexual assaults in medical and other institutions [1], [2]. Nowadays, there has been a steady increase in crimes related to sexual violence all over the world, according to various estimates, from 10 to 20% of minors are sexually abused [3], [4]. In the Republic of Kazakhstan, according to law enforcement agencies, unfavorable trends in the growth of sexual crimes against minors persist [5]. According to statistics, over the past 5 years, 4,836 criminal cases have been initiated in Kazakhstan for crimes against the sexual inviolability of minors, on average; this is about three cases every day [6]. The number of children who have become victims of sexual violence in Kazakhstan remains unacceptably high: in 2018 - 739, in 2019 - 794, and in 6 months of 2020 - 512 children. In addition, the share of minor victims aged under 12–13 years increased by 11.8% [7]. However, due to the high latency of sexual crimes, statistics on child sexual abuse are inconsistent and unreliable. Absolute indicators in this sphere do not always objectively reflect the real picture of the studied phenomena [2], [8]. At the same time, the issues of

preventing sexual crimes against minors in each region of Kazakhstan do not lose their relevance. Central Kazakhstan is an important economic and geographical region within the Republic of Kazakhstan, with a population of 1,385,533 people. The factors influencing the dynamics of crime in the region are the causes and conditions of crime, the demographic structure of the population and other social processes. It should also be noted that due to the latency of this type of crimes, their disclosure is of considerable difficulty. Sexual crimes against children require multifaceted objective and reasonable confirmation through the formation of a sufficient and weighty evidence base. In this series, the results of the forensic medical examination are of great importance. In this connection, a detailed analysis of forensic medical examinations conducted in the region, as well as the study and analysis of the structure of sexual crimes against minors, is of great informational and preventive importance not only for law enforcement agencies, but also for society as a whole.

The aim of this research is to analyze quantitative and qualitative indicators of crimes against the sexual inviolability of minors on the territory of Central Kazakhstan to form indicators for assessing the current situation in the region and recommendations for the prevention of these types of crimes.

Materials and Methods

A non-interventional retrospective (historical) cohort study was conducted. It includes an analysis of the results of 1252 forensic examinations of cases of sexual violence conducted by branches of the Center for Forensic Examinations of the Ministry of Justice in Central Kazakhstan in the period from 2018 to 2021. The retrospective analysis included: Selection and preparation of the necessary initial quantitative and qualitative data concerning sexual crimes against minors, analysis of the selected data with subsequent structuring, interpretation of the results, and preparation of recommendations. The objects of the study were minors who had been sexually abused: Girls and boys, in the following age categories: Under 6 years old, from 6 to 14 years old and over 14 years old.

The obtained data were processed using statistical software packages Statistica 10.0 (StatSoft Inc., USA) and SPSS 20. Methods of applied statistical analysis were used to analyze the results obtained. The calculation of 95% CI was carried out according to the Wilson method. Differences in values were considered statistically significant at a probability level of more than 95% ($p < 0.05$). To analyze qualitative variables in independent samples, were used methods for comparing frequencies (or shares) in groups (Pearson's criterion χ^2, Yates correction, Kendall correlation coefficient (τ), and Fisher criterion (ϕ^*)). To assess the degree of association (effect size), the Cramer criterion (V) was used with the corresponding interpretation of the values according to the recommendations of Rea and Parker, as <0.1 insignificant; 0.1 – <0.2 weak; 0.2 – <0.4 average; 0.4 – <0.6 relatively strong; 0.6 – <0.8 strong; and 0.8 – 1.0 very strong. To measure the tightness of the connection in the analysis of binary features, the criterion ϕ (Phi coefficient) was used. The assessment of the probability of an outcome depending on the presence or absence of a risk factor was assessed using relative risk (RR) and odds ratio (OR) indicators [9].

Results

Studies have shown that out of the total number of forensic medical examinations conducted in relation to the facts of sexual assault in the studied region, one third are forensic medical examinations for the examination of persons under 18 years of age, that is, minors. The analysis of the dynamics and structure of crimes against sexual inviolability and sexual freedom of minors in the territory of Central Kazakhstan showed an increase in the number of violent acts of a sexual nature committed against children (Figure 1).

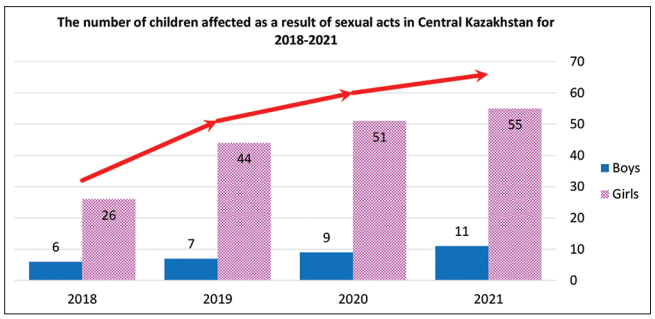

Figure 1: The number of children affected as a result of sexual acts in the territory of Central Kazakhstan in the period from 2018 to 2021. Note. The color-coding of the elements was chosen in accordance with the generally accepted color designations of the genders: males (solid blue columns), females (shaded pink columns)

Table 1 shows comparative data demonstrating the dynamics of sexual crimes in the studied territory against girls and boys from 2018 to 2021. Thus, the number of registered cases of sexual violence against girls in 2018, 2019, 2020, and 2021 was 14.87%, 25%, 28.98%, and 31.25%, respectively, which indicates a statistically significant increase in the number of this type of crimes every year on the territory of Central Kazakhstan ($\chi^2 = 11.23$, df = 3, $p = 0.011$). For boys, similar indicators were 18.18% in 2018, 21.21% in 2019, 27.27% in 2020, and 33.33% in 2021; however, no statistically significant differences were revealed.

There was no statistical difference between the year of the crime and the gender of the affected

Table 1: Dynamics of sexual crimes committed against children on the territory of Central Kazakhstan in 2018-2021 depending on the gender of the child

Gender	2018		2019		2020		2021	
	p%	CI 95%	p%	CI 95%	p%	CI 95%	p%	CI 95%
Girls	14.77	(10.29; 20.77)	25.00	(19.18; 31.89)	28.98	(22.78; 36.07)	31.25	(24.86; 38.44)
Boys	18.18	(8.61; 34.39)	21.21	(10.68; 37.75)	27.27	(15.07; 44.22)	33.33	(19.75; 50.39)

Share shown in percentage (p%), confidence interval 95% (CI 95%).

children (Pearson Chi-square (0.441, df = 3, p = 0.932), M-L Chi-square (0.437, df = 3, p = 0.933).

The study of the number of sexual crimes committed against girls using a comparative analysis of paired groups in two independent samples for 2018–2019 and 2020–2021 showed that their number increased statistically significantly - up to 60% (52.85; 67.17) in 2020–2021 compared with 2018–2019 - 40% (32.83; 47.15) (z = –3.838, p = 0.000, 95% CI of the difference in shares (–0.303; –0.1)). It was found that in the period from 2018 to 2020, the number of sexual acts against girls increased by more than 2.1 times, against boys - by 1.8 times. The results of the data analysis show that girls are victims of sexual violence on average 5.3 times more often than boys (from a minimum of 4.3 times in 2018 to a maximum of 6.3 times in 2019). A statistically significant difference was found between the sex of the child and the number of sexual crimes committed (χ^2 = 97.842, df = 1, p = 0.000): Boys are sexually abused in 15.79% (11.47; 21.34), and girls in 84.21% (78.66; 88.53).

The analysis of the age structure of children affected by sexual assault in Central Kazakhstan showed that the age of children who became victims of sexual violence depends on the gender of the child. For boys and girls, the most vulnerable age groups are completely different (Figure 2).

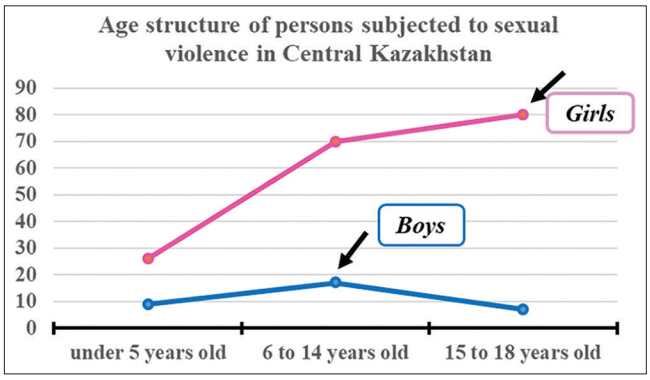

Figure 2: Distribution of sexual crimes against children in Central Kazakhstan by age. Note. The color-coding of the elements was chosen in accordance with the generally accepted color designations of the genders: males (solid blue columns), females (shaded pink columns)

When studying the age groups of children subjected to act of violence of sexual character, statistically significant differences in age between boys and girls were found (Pearson Chi-square (8.693, df = 2, p = 0.013), M-L Chi-square (9.223, df = 2, p = 0.010)), which are represented in Table 2.

Thus, the number of girls older than 14 years old who have been sexually abused is statistically significantly higher than the number of boys at the same age. Cramer's correlation coefficient (V) is equal to 0.204, which corresponds to the average degree of correlation between the child's age and gender.

During the comparison of paired groups in two independent samples for 2018–2019 and 2020–2021, statistical analysis using the Z criterion revealed statistically significant differences confirming the relationship between the year of the crime and the age group of the affected girls, Pearson Chi-square was 6.038, df = 2, p = 0.049 (p < 0.05). It was found that in 2020–2021 there were statistically significantly fewer attacks on girls of the younger age group (under 6 years old) - 9.4% (5.2;16.5), z = 2.458, p = 0.015 (0.026;0.253) compared to the period of 2018–2019 - 22.86% (14.59;33.95). Statistically significant differences were also found between other age groups. In relation to girls aged 14–18 years, sexual assaults are carried out more often - in 45.45% (38.27;52.83) compared with girls of other age categories: from 6 to 14 years - 39.77% (32.83;47.15), under the age of 6 years – 14.77% (10.29; 20.77), which is confirmed by the corresponding statistical values χ^2 = 28.14, df = 2, p = 0.000. The situation is quite different for boys: Most often sexual acts were committed in relation to boys aged 6 to 14 years - 53.13% (36.45; 69.13), less in relation to boys under the age of 6 years - 28.13% (15.56; 45.37) and much less often in relation to boys over 14 years - 18.75% (8.89; 35.31), statistical significance is confirmed by the corresponding values χ^2 = 6.06, df = 2, p = 0.048.

In the process of studying the socio-demographic peculiarities of sexual crimes on the territory of Central Kazakhstan, it was found that 73.3% of sexual crimes against girls and 84.85% against boys were committed by one person. However, the number of group crimes of this kind involving 2 or more persons remains at a consistently high level, regardless of the age or gender of the victim (Figure 3).

An analysis of the number of persons involved in commission of sexual crimes against children showed that their number does not depend on the gender of the child, but statistically significantly differ. The frequency of sexual crimes against girls committed by one person 73.3% (66.31;79.28) statistically significantly differs from the frequency of a similar type of crimes committed in a group of persons (2 or more) – 26.71% (20.72; 33.69) (z = 8.741, p = 0.000, CI 95% (0.367; 0.551). Statistically significant differences were found when processing qualitative data using the Pearson criterion χ^2 (38.20, df = 1, p = 0.000). In relation to boys,

sexual crimes are also committed mainly by one person in 84.85% (69.08; 93.35) in versus to –15.15% (6.65; 30.92), statistically significant differences in this case confirm the values of χ^2 = 16.03, df = 1, p = 0.000. Z criterion is also statistically significant and is equal to 5.662, p level is 0.000 (95% CI difference of shares (0.474; 0.817)).

In addition, the research showed (Table 3) that sexual crimes against boys in 93.94% (80.39; 98.32), and against girls in 59.09% (51.71; 66.09) were committed by persons familiar to them. Statistically significant differences were found: Yates Chi-square (13.272, df=1, p=0.00027) and ML Chi-square (18.443, df = 1, p = 0.00002). Fisher's exact test, two-tailed is also statistically significant, p = 0.00005. The correlation coefficient Phi is 0.266 and in this case demonstrates the average correlation between the acquaintance of the child with the identity of the perpetrator and the gender of the child.

When establishing the odds ratio (OR), it was found that the probability of an attack and the commission of a sexual crime by a person familiar to a child is almost 11 times higher than the probability of an attack by an unknown person - OR = 10.73; CI (OR) = (2.89;46.26). Thus, the maximum proportion - about 62% falls on known persons who are most often neighbors, stepfathers, relatives or family friends. However, it should be especially noted that for boys this figure was significantly higher and in some years reached 90%.

When studying the indicators for the crime scene, it was found that the ratio of the proportions of crimes committed in closed area (in apartments, abandoned premises, houses, garages, car interiors, etc.) and open area (on the street, in squares, parks, vacant lots, etc.) varies from year to year. Thus, during the analysis of the place where sexual violence against girls was committed over the specified period of time, statistically significant differences were found between the year of the crime and the type of locality where these types of crimes were mainly committed. It was found that the frequency of this type of incidents in premises or closed areas increased every year and reached maximum values in 2020-2021 (p < 0.05): Pearson Chi-square is 12.133, df = 3, p = 0.007, M-L Chi-square was 13.740, df = 3, p = 0.003. The Cramer's correlation coefficient (V) in this case was 0.263, which indicates an average linear relationship between the year of the crime and the place of the crime. When comparing paired groups in two independent samples for 2018–2019 and 2020–2021, statistical analysis using the Z criterion also revealed statistically significant differences confirming the relationship between the period of commission of this type of crime and the crime scene: Yates Chi-square (6.575, df = 1, p = 0.010), M-L Chi-square (7.439, df = 1, p = 0.006), two-tailed (p = 0.008), Fisher exact, two-tailed p = 0.008, and Phi for 2 × 2 tables (–0.208). Table 4 presents statistical indicators reflecting the situation on the studied issue in Central Kazakhstan for the specified period of time.

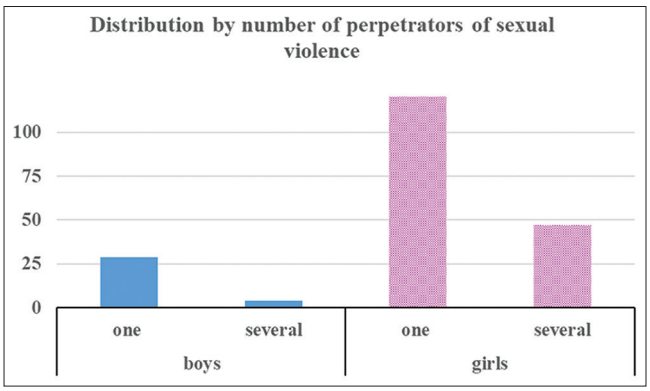

Figure 3: The number of sexual crimes against minors depending on the number of persons involved in the crime. Note. The color-coding of the elements was chosen in accordance with the generally accepted color designations of the genders: males (solid blue columns), females (shaded pink columns)

When establishing the odds ratio (OR), it was found that the probability of attacking girls and committing sexual crimes in closed area in 2020-2021 was 2.78 times higher than in 2018–2019 – OR = 2.781; CI (OR) = (1.322;5.849). While in 2018–2019, most of the similar crimes were committed in an open area.

In relation to boys, the research revealed a relationship between the age group of boys and the place where sexual crimes were committed. In general, most attacks on boys also occur in closed areas, but their number varies from the age of the child: under 6 years it is 77.78% (45.26; 93.68), over 14 years - 50% (18.76; 81.24), and at the age from 6 to 14 years - it is 100% (81.57;100): Pearson Chi-square was 8.823, df = 2, p = 0.012 and M-L Chi-square was 9.885, df = 2, p = 0.007. The Cramer's correlation coefficient (V) is 0.525, which corresponds to a relatively strong correlation between the age of boys and the crime scene.

When studying the number of sexual crimes against both girls and boys, no statistically significant relationship was found between the year of the crime and the season of the year, the age of the child and the season of the year. The frequency of committing crimes of this type in different seasons of the year is almost the same.

Table 2: Data of statistical analysis of the number (shares) of crimes against the sexual inviolability of children in Central Kazakhstan depending on age

Age	Boys		Girls		Z	p level	95% CI difference of shares
	p%	CI 95%	p%	CI 95%			
Under 6 years old	28.13	(15.57; 45.38)	14.77	(10.28; 20.76)	1.858	0.065	(–0.006; 0.312)
From 6 to 14 years old	53.13	(36.45; 69.13)	39.77	(32.83; 47.14)	1.409	0.160	(–0.049; 0.308)
Older 14 years old	18.75	(8.89; 35.31)	45.45	(38.27; 52.83)	–2.821	0.005*	(–0.39;-0.087)

Share shown in percentage (p%), 95% confidence interval (CI 95%). Statistically significant change *(p<0.05).

Table 3: Data of statistical analysis of the number (shares) of sexual crimes against children in Central Kazakhstan, depending on the familiarity of the victim with the personality of the perpetrator

Personality of the perpetrator	Boys		Gilrs		Z	p level	95% CI difference of shares
	p%	CI 95%	p%	CI 95%			
Known person	93.94	(80.39; 98,32)	59.09	(51.71; 66.08)	3.842	0.000*	(0.196; 0.434)
Unknown person	6.06	(1.68; 19,61)	40.91	(33.92; 48.29)	-3.842	0.000*	(–0.434; –0.196)

Share shown in percentage (p%), 95% confidence interval (CI 95%), number (n). Statistically significant change *(p<0.05).

Discussion

The analysis of qualitative and quantitative indicators of the number of sexual crimes committed against children on the territory of Central Kazakhstan revealed their progressive growth. On the one hand, in some countries in recent years, steady trends have been recorded in both absolute and relative numbers of rapes [10], [11], while in others their growth has been noted [12], [13], [14], [15]. On the other hand, according to some researchers, due to the high latency of this type of crime, this information is somewhat distorted and not entirely reliable [3], [16]. The high latency of sexual crimes among minors is associated with their physiological and psychological age characteristics [2], [8]. According to the literature, from 85% to 90% of perpetrators who commit sexual violence against children are men [1], [10], [14]. However, according to previous studies, only 19% of rapes committed or attempted are registered by law enforcement agencies [17], [18]. Sexual assaults against children have global character, as its victims are the most vulnerable category of victims. At the same time, most studies, including those conducted in Kazakhstan, indicate that children report cases of sexual violence much less often than adults [5], [6]. Thus, in 2019, England and Wales had the highest level of reported sexual violence in Europe (270 cases per 100,000 inhabitants), while the lowest rate of reported incidents was established in Cyprus (2 cases per 100,000 inhabitants) [1]. In general, in Europe and Asia, 20% of the total child population suffers from sexual violence [19], [20]. Between 150,000 and 200,000 cases of newly identified child sexual abuse occur annually in the United States [21]. The countries of the Commonwealth of Independent States also recorded an increase in the number of sexual offenses against minors [22]. According to law enforcement agencies, the level of sexual crimes committed against minors in Kazakhstan is growing by 9% annually [6]. The data obtained from the analysis of indicators obtained on the territory of Central Kazakhstan also confirm this. Most studies have found that girls are more likely to be sexually abused than boys, which fully corresponds to the data we have received. However, in the world, on average, these indicators are 1.5–3 times higher, and in Central Kazakhstan - 5.3 times.

According to most researchers, child sexual abuse can have multiple and long-lasting consequences at different levels: possible physical consequences include injuries, sexually transmitted infections, and unwanted pregnancy [20], [23]. In addition, researchers have identified a wide range of possible psychological consequences, such as anxiety, depression, and suicidal thoughts [8], [24]. Thus, according to the literature, 30.2–39% of children who have been victims of rape are diagnosed with various psychological disorders within a few months after the incident [10], [25]. In domestic medical and, in particular, forensic psychiatric practice, the problem of sexual abuse against children has not been studied enough. As studies have shown, sexual crimes against minors in Central Kazakhstan are not distributed randomly, but depend on many factors and are associated not only with the gender of the child, but also with his age, as well as some other circumstances.

Most studies show that the average age of sexually abused children is 11 years old [1], [26]. Researches carried out by Kovalev *et al.* indicate that the victims of rape are, as a rule, persons under 14 years old - 10%, 15 years old - 10%, 16 years old - 28%, 17 years old - 14%, 18 years old - 22%, 19 years old - 8%, from 20 to 25 years old - 8% [27]. However, according to other data, 20–30% of girls and 10% of boys are usually subjected to sexual violence under the age of 14 years old [28]. According to Do *et al*., up to 70% of boys under the age of 10 are sexually harassed at school [29]. At the same time, in Central Kazakhstan, the age of victims of sexual harassment depends on gender. So, for boys, this is the age from 6 to 14 years old, and for girls from 15 to 18 years old. Choudhary *et al.* attributed this to the lack of understanding of what is happening in boys at this age: It is easier to intimidate them and persuade them not to tell anyone what happened. In addition, the adult who committed the violence hopes that at this age the child will not yet be able to describe what happened in words: since the child's fantasies are often mixed with reality, and most likely, the child's story will not be believed, even if he tells about it [30]. According

Table 4: Data of statistical analysis of the number (shares) of crimes against the sexual inviolability of girls in Central Kazakhstan, depending on the place of commission of the crime for 2018–2018 and 2020–2021

Place of commission of the crime (location type)	Years of commission of the crime						Z	P level	95% CI difference of shares
	2018-2019			2020-2021					
	n	p%	CI 95%	n	p	CI 95%			
Closed area	48	68.57	(56.97; 78.24)	91	85.85	(77.96; 91.23)	−2.754	0.007*	(–0.301; –0.048)
Open area	22	31.43	(21.76; 43.03)	15	14.15	(8.77; 22.04)	2.754	0.007*	(0.048; 0.301)

Share shown in percentage (p%), 95% confident interval (CI 95%), number (n). Statistically significant change *(p<0.05).

to literary data, girls aged 14–18 years old, most often 17-year-olds, without sufficient communication experience, under the influence of the desire to seem older, to assert themselves in the role of an "attractive woman" surrounded by fans, and willingly start dating at this age [29].

Group forms of rape and violent sexual acts are directly dependent on the age of the perpetrators [25]. Another feature identified in the analysis of group forms of violent acts of sexual character is the greater focus of such actions in relation to males [8]. According to Choudhary *et al.* up to 33% of rapes are of a group nature [18]. Psychological researches show that with increase in the age of the victim (15–17 years old) the risk of rape by peers, including a group of acquaintances, is growing [12]. Grouping with peers is largely determined by the age characteristics of the individual, the younger the perpetrator, the more often he commits group forms of sexual violence [19]. According to our data, the percentage of group rapes and violent sexual acts against girls is significantly higher in the age group of persons from 14 to 18 years old. However, it should be especially noted that on the territory of Central Kazakhstan, sexual crimes against children, regardless of gender, are committed mainly by one person, while group actions are more common against girls than boys (26.7% vs. 15.15%).

According to some data, in 75% of cases, rapists are known to children and only 25% of rapists are complete unknown people [13]. According to others, 90% of teenage girls knew the rapist [14], [21]. An analysis of the literature shows that sexual violence against teen boys is most often committed by friends or classmates [20], [21]. More than half of Kazakhstani schoolchildren (66.2%) experience violence in schools [6]. Numerous data indicate that often parents, guardians, or other close persons for a child become perpetrators of sexual crimes, who, using his helpless or defenseless state, can commit these assaults for a long period of time [22], [23], [26]. In 45% of cases, the rapist is a relative, in 30% - a more distant acquaintance (brother's friend, mother's lover, etc.) [25], [29]. Among relatives, violence is most often committed by a father, stepfather, and guardian, less often by a brother or uncle [5], [28]. However, if we compare male and female victims of sexual violence, the perpetrator is usually: A male relative (stepfather) for girls (35.1%) and another known person (27.3%) for boys. These data completely coincide with the data obtained during the study of this issue in Central Kazakhstan: The probability of an attack and commission of a sexual crime by a person known to a child in the region is almost 11 times higher than the probability of an attack by an unknown person.

It is noted in the literature that the situation of the commission of a sexual crime includes the territorial, climatic, demographic and other specifics of the region in which the crime was committed, as well as the circumstances characterizing the immediate place, time, conditions and other features [1], [21]. Thus, C.Lemaigre *et al.* found that sexual crimes against children more often occur in the afternoon or early evening than at other times, and usually in the place of residence of the child or the perpetrator, if they lived separately [16]. In their opinion, this reflects the influence of normal daily activities (while studying at school, surrounded by other adults and children), during which children are less at risk of committing sexual crimes against them [28]. The vulnerable characteristics of child victims, according to Dyar *et al.,* include the absence of a father, living in a foster family or with a stepfather, in families with lower income, etc. [21]. We believe that certain places are most associated with a certain risk of committing this type of crime. A considerable part of rapes are committed in living premises, as a rule, apartments and less often in individual dwellings (12.6%). At the same time, most often (in eight cases out of ten) rape is committed in residential premises where minors lived [17]. As the analysis of the information we have studied shows, the majority of rapes committed in basements, attics, and entrances of houses characterized by privacy and relative desolation are committed by rapists of a younger age, which corresponds to Western research data (58.9%) [1], [3]. Most of the crimes of this type from 80% to 92% according to various data are committed in living premises, according to Choudhary *et al.,* this is due to the fact that they are more isolated from the access of unauthorized persons, and the criminal, as a rule, has enough time to carry out his plan [18]. In addition, perpetrators most often commit rape in places that are more familiar to them [20]. In addition, the place of rape by minors depends on the nature of the relationship between the perpetrator and the victim. In particular, it was found that when raped on the street, the very situation of the act indicates that the rapists, as a rule, do not know the victim. Rapes in living premises in 68.3% are committed against girls previously known to rapists, while in 14.8% of cases rapes were committed against victims whom the perpetrators met shortly before the crime occurred [12]. The literature indicates that adult perpetrators commit rape more deliberately - they very often threaten or deceive the victim home or enter her house [19]. Thus, the results of researches conducted in Central Kazakhstan indicate that over the past 2 years, the number of sexual acts against young children committed in closed-type premises, in particular, in living premises, has sharply increased, which is also confirmed by data from researchers from other countries [31], [32]. This may be due to restrictions on the movement of people during a lockdown. The increase in sexual violence against children due to quarantine restrictions caused by the COVID-19 epidemic is associated, according to many researchers, not only with restrictions on movement, but also with loss of income, isolation, school closures, overcrowding, and high levels of stress and anxiety [31]. All of this has increased the probability of sexual violence

at home, especially for children in dysfunctional family situations. In addition, the situation was aggravated by the fact that children did not have access to school friends, teachers, or social workers [19].

Despite the limitations of the research: the narrowness of the study of the problem by one region of Kazakhstan and the retrospective nature of the study, which did not allow obtaining additional data from rape victims, this research provides a number of analytical data for the implementation of preventive measures to improve the current situation not only in this region, but also in Kazakhstan in general. An assessment of the current situation in each individual region is necessary for the formation of specific local preventive measures. The lack of clear criteria for the procedure for examining abused children in medical institutions also limits the formation of a clear and well-founded evidence base when forming a forensic medical report and, as a consequence, a guilty verdict.

Conclusion

The state is making certain efforts to improve national legislation to prevent sexual crimes against children. The most urgent problem requiring the consolidation of the efforts of all concerned departments is currently the prevention of crimes against sexual freedom and sexual inviolability of minors. Many strategies for the prevention of sexual crimes include forensic examination of the structure of crimes in each specific region. Much more combined research is needed to figure out the types of situational factors that are most relevant, and how these situational factors interact with the individual factors of the perpetrator (and potential victim). In Kazakhstan, it is necessary to finalize the concept of strengthening the response in the health-care system and ensure that this concept becomes an effective and officially adopted response system at the level of medical institutions.

There is no conflict of interest.

Author's Contributions

Saule Mussabekova: Conceptualization, research, methodology, collection of materials, analysis, visualization, writing-original, and editing. Ksenia Mkhitaryan: Data processing, resources, and preparation of graphical support.

Credits

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References

1. Chiesa A, Goldson E. Child sexual abuse. Pediatr Rev. 2017;38(3):105-18. https://doi.org/10.1542/pir.2016-0113
PMid:28250071
2. Wong G. Forensic medical evaluation of children who present with suspected sexual abuse: How do we know what we know? J Paediatr Child Health. 2019;55(12):1492-6. https://doi.org/10.1111/jpc.14691
PMid:31774606
3. Morrison SE, Bruce C, Wilson S. Children's disclosure of sexual abuse: A systematic review of qualitative research exploring barriers and facilitators. J Child Sex Abus. 2018;27(2):176-94. https://doi.org/10.1080/10538712.2018.1425943
PMid:29488844
4. Platt VB, Back IC, Hauschild DB, Guedert JM. Sexual violence against children: Authors, victims and consequences. Cien Saude Colet. 2018;23(4):1019-31. https://doi.org/10.1590/1413-81232018234.11362016
PMid:29694574
5. Mussabekova SA. Possibilities of semen stain identification after clothing and bedding washing in investigating cases of sexual assault. Period Tche Quim. 2020;17(34):93-111. https://doi.org/10.52571/PTQ.v17.n34.2020.111_P34_pgs_93_111.pdf
6. Buberbaev ND. O On some indicators of the state of crime in the city of Astana. Bulletin of St. Petersburg University of the Ministry of Internal Affairs of Russia.2018;3(79):42-6.
7. Mussabekova S. Forensic medical capacities of research of saliva stains on physical evidence after washing. Int J Law Polit Sci. 2017;11(5):1123-7. https://doi.org/10.5281/zenodo.1130175
8. Sekhar DL, Kraschnewski JL, Stuckey HL, Witt PD, Francis EB, Moore GA, *et al*. Opportunities and challenges in screening for childhood sexual abuse. Child Abuse Negl. 2018;85:156-63. https://doi.org/10.1016/j.chiabu.2017.07.019
PMid:28807480
9. Grjibovski AM, Ivanov SV, Gorbatova MA. Analysis of nominal and ordinal data using Statistica and SPSS software. Sci Healthc. 2016;6:5-39.
10. Constantí VA, Barcenilla AI, de la Maza VT, de Albéniz IM, Grado CG, Cubells CL. Acute sexual abuse in children and adolescents: A methodological contribution to improve the quality of care. Rev Esp Salud Publica. 2021;95:1-8. Available from: https://www.sanidad.gob.es/biblioPublic/publicaciones/recursos_propios/resp/revista_cdrom/VOL95/O_BREVES/RS95C_202108116.pdf [Last accessed on 2022 Apr 30].
11. Jordan KS, Steelman SH, Leary M, Varela-Gonzalez L, Lassiter SL, Montminy L, *et al*. Pediatric sexual abuse: An interprofessional approach to optimizing emergency care. J Forensic Nurs. 2019;15(1):18-25. https://doi.org/10.1097/jfn.0000000000000232

PMid:30789466

12. Miziara ID, Miziara CS, Salguero Aguiar L, Alvez B. Physical evidence of rape against children and adolescents in Brazil: Analysis of 13,870 reports of sexual assault in 2017. SAGE Open Med. 2022;10:20503121221088682. https://doi.org/10.1177/20503121221088682
PMid:35342626
13. Soussia RB, Omezzine RG, Bouali W, Zemzem M, Bouslah S, Zarrouk L, *et al*. Epidemioclinical and legal aspects of sexual abuse among minors in Monastir, Tunisia. Pan Afr Med J. 2021;38:105. https://doi.org/10.11604/pamj.2021.38.105.21766
PMid:33889271
14. Silva WD, Barroso-Junior UO. Child Sexual Abuse Confirmed by Forensic Examination in Salvador, Bahia, Brazil. Am J Forensic Med Pathol. 2017;38(1):54-8. https://doi.org/10.1097/paf.0000000000000283
PMid:27906701
15. Tyagi S, Karande S. Child sexual abuse in India: A wake-up call. J Postgrad Med. 2021;67(3):125-9. https://doi.org/10.4103/jpgm.jpgm_264_21
PMid:34380802
16. Lemaigre C, Taylor EP, Gittoes C. Barriers and facilitators to disclosing sexual abuse in childhood and adolescence: A systematic review. Child Abuse Negl. 2017;70:39-52. https://doi.org/10.1016/j.chiabu.2017.05.009
PMid:28551460
17. Devgun M, Roopesh BN, Seshadri S. Breaking the silence: Development of a qualitative measure for inquiry of child sexual abuse (CSA) awareness and perceived barriers to CSA disclosure. Asian J Psychiatr. 2021;57:102558. https://doi.org/10.1016/j.ajp.2021.102558
PMid:33548907
18. Choudhary V, Satapathy S, Sagar R. Multidimensional scale for child sexual abuse (MSCSA): Development and psychometric properties. Asian J Psychiatr. 2021;60:102643. https://doi.org/10.1016/j.ajp.2021.102643
PMid:33857790
19. Tadei A, Pensar J, Corander J, Finnilä K, Santtila P, Antfolk J. A Bayesian Decision-Support Tool for Child Sexual Abuse Assessment and Investigation. Sex Abuse. 2019;31(4):374-96. https://doi.org/10.1177/1079063217732791
PMid:28933247
20. Satapathy S, Choudhary V, Sagar R. Tools to assess psychological trauma and its correlates in child sexual abuse: A review and current needs in Asia. Asian J Psychiatr. 2017;25:60-73. https://doi.org/10.1016/j.ajp.2016.10.012
PMid:28262176
21. Diaz A, Peake K. Administration of childhood physical and childhood sexual abuse screens in adolescents and young adults: A literature review. Ann Glob Health. 2017;83(5-6):718-25. https://doi.org/10.1016/j.aogh.2017.10.016
PMid:29248087
22. Dikusar JS. Peculiarities of committing violent sexual crimes by minors. Russian law: education, practice, science. 2016;3(93):53-5. Available from: https://cyberleninka.ru/article/n/osobennosti-sovershheniya-nasilstvennyh-polovyh-prestupleniy-nesovershennoletnimi. [Last accessed on 2021 Sep 12].
23. Cruz MA, Gomes NP, Campos LM, Estrela FM, Whitaker MC, Lírio JG. Impacts of sexual abuse in childhood and adolescence: An integrative review. Cien Saude Colet. 2021;26(4):1369-80. https://doi.org/10.1590/1413-81232021264.02862019
PMid:33886765
24. Tanaka M, Suzuki YE, Aoyama I, Takaoka K, MacMillan HL. Child sexual abuse in Japan: A systematic review and future directions. Child Abuse Negl. 2017;66:31-40. https://doi.org/10.1016/j.chiabu
25. Veenema TG, Thornton CP, Corley A. The public health crisis of child sexual abuse in low and middle income countries: An integrative review of the literature. Int J Nurs Stud. 2015;52(4):864-81. https://doi.org/10.1016/j.ijnurstu.2014.10.017
PMid:25557553
26. Escalante-Barrios EL, Fàbregues S, Meneses J, García-Vita MD, Jabba D, Ricardo-Barreto C, *et al*. Male-On-Male Child and Adolescent Sexual Abuse in the Caribbean Region of Colombia: A Secondary Analysis of Medico-Legal Reports. Int J Environ Res Public Health. 2020;17(21):8248. https://doi.org/10.3390/ijerph17218248
PMid:33171688
27. Kovalev AV, Kozlova TP. The comprehensive approach to the performance of forensic medical expertises of the injuries inflicted to juvenile victims of suspected compulsive actions. Sud Med Ekspert. 2017;60(2):4-6. https://doi.org/10.17116/sudmed20176024-6
PMid:28399077
28. Chandraratne NK, Fernando AD, Gunawardena N. Physical, sexual and emotional abuse during childhood: Experiences of a sample of Sri Lankan Young adults. Child Abuse Negl. 2018;81:214-24. https://doi.org/10.1016/j.chiabu.2018.05.004
PMid:29753201
29. Do HN, Nguyen HQ, Nguyen LT, Nguyen HD, Bui TP, Phan NT, *et al*. Perception and Attitude about Child Sexual Abuse among Vietnamese School-Age Children. Int J Environ Res Public Health. 2019;16(20):3973. https://doi.org/10.3390/ijerph16203973
PMid:31635222
30. Cao Z, An ZY, Zhao Y, Zhao D. Forensic identification of child sexual abuse. Fa Yi Xue Za Zhi. 2019;35(6):733-6. https://doi.org/10.12116/j.issn.1004-5619.2019.06.016
PMid:31970963
31. Cappa C, Jijon I. COVID-19 and violence against children: A review of early studies. Child Abuse Negl. 2021;116(Pt 2):105053. https://doi.org/10.1016/j.chiabu.2021.105053
PMid:33965215
32. Tener D, Marmor A, Katz C, Newman A, Silovsky JF, Shields J, *et al*. How does COVID-19 impact intrafamilial child sexual abuse? Comparison analysis of reports by practitioners in Israel and the US. Child Abuse Negl. 2021;116(Pt2):104779. https://doi.org/10.1016/j.chiabu.2020.104779
PMid:33143870