Sex offenders: risk assessment, risk factors and treatment
Agressores sexuais: avaliação de risco, fatores de risco e tratamento

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Abstract
Sex offending is a modality of crime with high rates of recidivism. In countries like Brazil, where there is no legal life sentence, attempts to treat sex offenders and reduce risk of recidivism are extremely important. Treatment for sex offenders has strong evidence to be effective. The best evidence-based treatment recommendations for sex offenders would be a well-designed cognitive behavioral-oriented therapy program and hormonal therapy, since these approaches can be complementary and potentiate each other. The combination is associated with best results, as compared to monotherapy. Surgical orchietomy has strong evidence of success in risk reduction, in spite of all possible criticism. However, hormonal or surgical therapy for sex offenders management are not properly regulated in Brazil and depend on individual initiatives. For non-violent or “hands-off” sex offenders, serotonergic drugs are acceptable as first choice. In general the treatment can reduce the rates of recidivism by one third. However there are important limitations in our capacity to predict future criminal behavior. Using actuarial risk assessment tools we can just provide a probability, but not discriminate the patients who will certainly re-offend from those who will not. The psychiatric and legal aspects of this topic will be discussed in the present paper.

Key words: Forensic psychiatry, Sex offenses/prevention & control, Evaluation, Prognosis, Criminology, Recurrence

Resumo
Agressão sexual é uma modalidade de crime que apresenta altos índices de reincidência. Em países como o Brasil, onde não há prisão perpétua, as tentativas de tratamento dos agressores sexuais, objetivando a redução do risco de reincidência, são extremamente importantes. Existem fortes evidências da eficácia dos tratamentos para criminosos sexuais. A melhor evidência para o tratamento desses indivíduos é a combinação de um programa com terapia cognitivo-comportamental e terapia hormonal, uma vez que essas abordagens terapêuticas podem ser complementares e potencializar uma a outra. A combinação dessas modalidades terapêuticas apresenta melhores resultados que a monoterapia. Orquiectomia apresenta boas evidências de sucesso na redução de risco, apesar de todas as críticas possíveis. No entanto, a terapia para agressores sexuais, seja ela hormonal ou cirúrgica, não é regulamentada adequadamente no Brasil, e depende de iniciativas individuais. Para o tratamento de agressores sexuais pouco violentos, é aceitável o uso de drogas serotonérgicas como primeira escolha. Em geral, o tratamento pode reduzir as taxas de reincidência em um terço. No entanto, existem limitações importantes na capacidade de prever o comportamento criminoso no futuro. Valendo-se de instrumentos padronizados de avaliação, pode-se apenas fornecer uma probabilidade de reincidência, porém não há como discriminar com certeza o indivíduo que reincidirá ou não. Desse modo, aspectos psiquiátricos e legais desse tema serão discutidos no presente trabalho.

Descritores: Psiquiatria forense, Delitos sexuais/prevenção & controle, Avaliação, Prognóstico, Criminologia, Recidiva

Introduction
Sex offending is a modality of crime that has intense public appeal and aversion, raising political discussions about punishment and means to reduce recidivism. Since in Brazil there is no legal possibility for a life sentence, attempts to treat and reduce risk are extremely important(1). The general concerns over this population of criminals is justified, since statistics show that between 10 and 20% of them will reoffend within 4 to 5 years(2,3). In a recent meta-analysis encompassing 118 studies, for a pooled sample of 28,757...
adult sex offenders, sexual recidivism rate was 11.5%. any violent recidivism occurred in 19.5% of the cases and general recidivism in 33.2%[64]. Recidivism for any kind of crime can be as high as 43%, demonstrating that sexual offences are not the only concern in this population[9]. The picture for adolescents can be even worse: in an Australian sample of 303 male sex offenders, 25% were reconvicted before their 18th birthday and, as adults, 9% were charged for sexual offences, while a total of 61.3% were convicted of non-sexual offences as adults[66].

Sexual violence can be defined as “actual, attempted, or threatened sexual contact with another person that is non-consensual”[7]. Sex offenders are a very heterogeneous group, ranging from people convicted of a single episode to serial rapists and sexual homicides[68]. Of most concern, of course, are the serial offenders, since, by definition, they are successful criminals, as law enforcement could not detain them before they committed two or more sexual crimes[8].

Sex offenders may also be analyzed according to their motivations, derived from criminological and behavioral classification[68,9]:

- **Necessity of power or control**: some sex offenders use violence to enhance their sensation of control over the environment, their victims and themselves, sometimes compensating a very passive existence; It can also be a way to send a message, showing who is in charge, as in prison or marital rape;
- **Desire to create emotional intimacy or attachment**: some will even believe or have the fantasy that they are “making love”, having a meaningful connection, ignoring the victims feelings or being unable to read their signs;
- **Discharge of anger**: some sexual offenders use assaults as a mean to compensate their anger and frustration, or as revenge;
- **Desire to feel competent**: frustrated by their own sexual performance, they use violence to prove their masculinity, generally choosing weaker opponents;
- **Sexual curiosity**: more common in adolescents;
- **Sexual gratification**: victims are objects and will be chosen according to the offender’s sexual orientation;
- **Sadism**: involves a ritual of sex and aggression. The victim is likely to have some characteristics the aggressor wants to destroy, and the experience of humiliating and abusing is intensely exciting.

The criminological view points three dimensions in sexual offences: power, anger and sadism[9]. According to Groth, a researcher in this field, 55% are of the power type, 40% of the anger type and 5% of the sadistic type[9]. The conclusion is that sexual offences are, in nature, violent acts instead of pure hedonistic sexual acts[9]. This science also classifies these crimes by rape situation: individual; gang; serial; acquaintance (involving someone known to the victim – estimated to be 50% of the cases); in a date; marital; and statutory (victim is underage)[9].

From the medical point of view, many of them will not have a formal diagnosis related to sexuality. In a Dutch survey on 5480 cases of sex offences among adolescents, 45% of the violent sex offenders, 41% of the child molesters and 32% of the nonviolent sex offenders had no psychiatric disorder, being conduct disorder the most common diagnosis[10]. A screening study in the United States, over a population of 113 adult sex offenders found a lifetime prevalence of 74% for any DSM-IV Axis I diagnosis, 85% of substance misuse disorders, 74% of paraphilias and 58% of mood disorders[11]. Regarding severe mental illness (psychoses, mood disorders and organic disorders), a Swedish study, using their national “Crime Register” from 1988 to 2000, retrieved 8,495 sex offenders, of whom 4.8% had a previous hospitalization for mental disorders; co-morbidity with substance misuse prevalence was 12.7% and personality disorders, 6.2%[12]. Another Swedish study, a cohort using hospital records of 1,215 convicted sex offenders in the period of 1993 and 1997, found 11.3% of any psychiatric inpatient care one year prior to conviction, being only 0.1% cases of sexual disorders. These results are limited and deserve care when interpreting, since it is rare to have an inpatient with a paraphilia or personality disorder as primary diagnosis for hospital admission[13]. In this last study, recidivism was 15.1% for any crime (5.9% for sexual, 10.4% for violent nonsexually)[13].

When a medical diagnosis is given, it’s likely to be a paraphilia or perversion, a group of disorders defined as “recurrent, intense, sexually arousing fantasies, urges, or behaviors, over a period of six months, generally involving non-human objects, suffering or humiliation of oneself or one’s partner, or children or other non-consenting person”[6,14]. The term “paraphilia” itself means marginal or beyond the usual (para) attraction (philia), encompassing a broad set of unusual sexual interests[15]. The DSM-IV-TR defines that the patient must present a clear deviant mode of sexual gratification, with evidence of a consistent pattern of arousal when exposed to these stimuli (like sexual urges and fantasies)[16]. This pattern has to be recurrent and intense for at least six months. The person must have acted upon these paraphilic urges or the symptoms and they must have caused marked distress[16]. Extrapolating the DSM-IV-TR subtypes of paraphilia (exhibitionism: exposing of one’s genitals to a stranger; fetishism: using inert objects; frotteurism: rubbing or touching; pedophilia: involving children age 13 or younger; sexual masochism: suffering of
pain; sexual sadism: inflicting of pain; transvestic fetishism: cross-dressing; voyeurism: observing of unsuspected person; paraphilia N.O.S), some authors have expanded the classification, according to the deviant interests\(^{(14,15,16)}\):

- Displacement/Allurement Types: Asphixiophilia (self-strangulation); Autagonistophilia (on stage); Autassassinophilia (own murder staged); Frotteurism (rub against stranger); Narratophilia (erotic talk); Peidoeiktophilia (penen exhibitionism); Pictophilia (pictures); Scoptophilia (watching coitus); Telephone scatophilia (lewdness); Voyeurism or peeping tomism;
- Eligibility Types: Acrotomohilia (amputee partner); Apotemnophilia (self-amputee); Ephebophilia (youth)/age discrepancy paraphilias; Gerontophilia (elder)/age discrepancy paraphilias; Necrophilia (corpse); Pedophilia (child)/age discrepancy paraphilias; Stigmatophilia (piercing; tattoo); Zoophilia (animal);
- Fetish Types: Coprophilia (feces); Fetishism; Hyhephilia (fabrics); Klismaphilia (enema); Myophilia (filth); Urophilia or undinidm (urine); Merchantile; Troilism (couple + one);
- Predatory Types: Erotophophilia (lust murder); Kleptophilia (stealing); Rapism or Biophilia (violent assault); Somnophilia (sleeper);
- Sacrificial Types: Masochism (suffering pain); Sadism (inflicting of pain and suffering); Symphotophilia (disaster);
- Paraphilia-Related Disorders: Compulsive masturbation; Protracted promiscuity; Pornography dependence; Telephone sex dependence; Cyber sex dependence; Severe sexual desire incompatibility; Paraphilia-Related Disorder N.O.S.

When assessing a sex offender, it is important to establish a proper diagnosis, if applicable. Someone who has engaged in a sex crime, as described above, will not necessarily have a paraphilia or another psychiatric diagnosis\(^{(15,16)}\). A complete anamnesis, with particular attention to sexual fantasies, urges and behaviors is necessary. When a paraphilia is diagnosed based on the criteria described above, the second step is to establish whether the offense was related to the paraphilia, and if this diagnosis implies volitional impairment\(^{(16)}\). Many offenders will try to use a diagnosis to justify their actions, as well as Justice, in many cases, will seek a psychiatric diagnosis for civil commitment and indeterminate sentences\(^{(16)}\).

**Methods**

Relevant publications were selected through a search of the English and Portuguese-language literature indexed on the following search engines: Medline (Pubmed®), Cochrane Library® and Scielo®. The terms used were: sexual offender, sexual offence, rape, pedophilia, sexual crime, personality disorder, inmate, forensic patient, penitentiary, forensic hospital, psychiatry, behavioral therapy, treatment, hormonal. The authors selected papers based on relevance for the topic and the additional bibliography were selected from up-to-date criminology textbooks.

**Risk assessment tools for sex offenders**

There are two main categories of structured risk assessment tools used in modern forensic practice:

- **Actuarial tools**: are based on well-structured tools, having “supposedly validated relationships between measurable predictor and ultimately determined by mechanical, explicit rules”\(^{(7)}\). It’s a formal method, and uses an equation, graph or formula, where the score will be converted to a probability value for the expected outcome\(^{(7)}\). Litwak (2001) argues that even the actuarial tools require, in some of its items, some clinical or subjective judgement, being not the prototype of an actuarial measure, like height or weight\(^{(7)}\). The example would be Hare’s Psychopathy scales (PCL-R) and the Violence Risk Appraisal Guide (VRAG);

- **Structured Professional Judgement (SP)**: as actuarial tools, these are structured assessments, based on a list of items to be rated, usually in ‘present, unknown or absent’. These factors are derived from broad review of literature and are known risk factors for violent behavior. The evaluator will complete all the required factors using interviews, records and collateral information. The professional will take into account all the risk factors, but will use his clinical expertise to reach a conclusion, generally rating the risk in low, medium or high. These assessments include clinical variables that change over time\(^{(7)}\). They are a more recent approach, and started to be used in the 1990s\(^{(7)}\). Some examples of these tools are: Early Assessment Risk List for Boys, Version 2 (EARL-20B), Sex Offender Risk Appraisal Guide (SORAG), Historical, Clinical, Risk Management-20 tool (HCR-20), Manual for the Structured Assessment of Violence Risk in Youth (SAVRY), Sexual Violence Risk–20 (SVR-20), and the Spouse Assault Risk Assessment Manual (SARA)\(^{(7)}\).

The three main specific risk assessment tools used for sex offenders are the Static-99, the Sexual Violence Risk – 20 (SVR-20) and the Risk for Sexual Violence Protocol (RSVP). The first is an actuarial tool, while the other two are Structured Professional Judgement (SP) tools, all designed for adult male population of sex offenders\(^{(7)}\). For SVR-20, inter-rater reliability for total
score (Cohen’s $\kappa$ or intra-class correlation coefficients) ranged from 0.50 to 0.93; and for RSVP, it ranged from 0.68 to 0.92, depending on the study\(^{(7)}\). Regarding predictive validity, the results are controversial, reflecting variability of results due to different methods used, type of target population, type of sex offender, what was considered recidivism and length of follow-up; said that, reviews and meta-analysis found evidence that these tools can predict sexual recidivism, although some studies found no predictive power at all\(^{4,7,18,19,20}\).

Hanson, Morton-Bourgon (2009), analyzing 118 studies that used specific tools such as SORAG, SVR-20, Static-99 and RSVP, found the following mean effect sizes (measured by standardized mean difference)\(^{(4)}\):

- Actuarial tools - 0.67 (Confidence Interval 95% – CI 0.63 to 0.72) for sexual re-offending, and 0.51 (CI 0.47 to 0.56) for any re-offence;
- SPJ - 0.46 (CI 0.29 to 0.62) for sexual re-offending and 0.31 (CI 0.13 to 0.49) for any re-offence.

The tool with the best predictive capacity was the SVR-20\(^{(4)}\).

Another meta-analysis, by Singh et al (2011)\(^{(19)}\), using area under the curve (AUC) measures to compare the tools, found that the following values for violent offences, which included sex offences:

- SVR-20 – 0.78 (Inter Quartile Range - IQR =0.71–0.83);
- SORAG 0.75 (IQR=0.69–0.79);
- Static-99 0.70 (IQR=0.62–0.72).

These findings show that those tools can predict recidivism and are among the ones with the best positive predictive values The AUC is a method to measure accuracy and compares sensitivity to specificity; the closer to 1.0 value, the best the test or scale will be; if the value is about 0.5, the result can be considered invalid. So, the predictability of these tools can be considered between fair and good, but they will have false positives and false negatives. Furthermore, since the population of sex offenders is heterogeneous, as discussed above, there can be differences in predictability among the different groups\(^{20}\). For SORAG, for example, differences were found when stratifying the sample: although it had fair to good AUC for extra-familial child molesters and incest offenders (0.70 to 0.93), the predictive power for rapists and hands-off offenders was almost as good as chance (0.46 to 0.71)\(^{20}\).

Other risk assessment tools cited and less used were Minnesota Sex Offender Screening Tool-Revised (MnSOST-R), and Automated Sexual Recidivism Scale (ASRS).

### Relevant Risk Factors

Mann et al (2010)\(^{(3)}\) studied psychological meaningful risk factors for recidivism in this population, derived from risk assessment tools. In order of importance, the items that were found to have the strongest empirical relationship with sexual recidivism were: sexual preoccupation; any deviant sexual interest (as sexual preference for children, sexualized violence and multiple paraphilias); offence-supportive attitudes; emotional congruence with children; lack of emotionally intimate relationships with adults; impulsivity; general self-regulation problems; poor cognitive problem solving; resistance to rules and supervision; grievance/hostility; and negative social influences\(^{(3)}\). Interestingly, this meta-analysis could not find a significant relation between sexual re-offending and denial of crimes; view of self as inadequate, major mental illness; or loneliness, in spite of other important studies having found association\(^{(3)}\).

In Brazil, Baltieri, Andrade (2008) found that impulsivity and history of being sexually abused were predicting factors for the group of serial rapists (aggressors against three or more victims) in relation to the aggressors against one victim\(^{(21)}\).

### Treatment for Sex Offenders

Given the rates of re-offending and the reaction from society, many attempts to treat this group and reduce their risk of re-offending are being carried out.

These treatments can be divided in 3 main categories\(^{(1)}\):

1. Psychological interventions – mainly based on cognitive and behavioral principles\(^{(1)}\);
2. Pharmacological treatments: hormonal or other drugs to reduce sex drive, such as a serotonergic antidepressants;
3. Surgical castration.

Surgical castration is rarely studied nowadays, for ethical reasons, although five American states and Germany have specific legislation that allows it\(^{(1,18,22)}\). A search on Medline®, using the terms “castration sex offender”, will retrieve 16 papers, most of them reflections on legislation and ethics. Studies that actually carried out the surgical procedure have more than 20 years of age, and are in number of eight\(^{(1)}\). The pooled effect-size for these results led to an average odds ratio of 15.03, a robust evidence, much higher than the pooled effect-size of 66 trials for psychological interventions (OR of 1.38)\(^{(1)}\). In absolute terms, it could reduce recidivism to rates between 2% and 5%\(^{(18)}\).

All over the world, the most common form of treatment is structured cognitive-behavioral program (CBT)\(^{(2)}\). They are similar in the sense that they follow a SPJ risk assessment where the needs or individual targets are identified and a risk management program is designed. They focus on empathy development, life/social skills, sexual impulses control, cognitive
distortions, denial, anger management and relapse prevention; their length is about 200 hours\textsuperscript{(18,24,25,26)}. The effect size for CBT treatment, in one review, was an OR of 1.46 (CI 1.12 – 1.90); interestingly, other kinds of therapy (such as analytical) have shown no effects at all\textsuperscript{(19)}. A community-based program in the UK followed 413 child molesters, and found a re-offending rate of 12% in a period of 2 to 4 years (average of 30 months). In this last study, no differences were found between treated and untreated patients, however comparing treatment responders to non-responders, responders had a lower rate of recidivism (9% and 15%, respectively)\textsuperscript{(20)}. Although CBT-based programs are the most common form of treatment, pooled statistics comparison shows evidence that this approach is the less effective, compared to hormonal or surgical castration\textsuperscript{(1)}.

Hormonal treatments are the most effective of all drug-based treatments for sex offenders. The general objective is to reduce sex drive or libido by blocking the effects of the masculine hormone testosterone or by causing hypogonadism (through the inhibition of the hypothalamic-pituitary-gonadal axis). It can be accomplished by using anti-androgens synthetic hormones, the most common being cyproterone acetate and medroxyprogesterone acetate\textsuperscript{(20)}. Other agents could be cited: flutamide, nilutamide, triptorelin, leuprolide acetate and goserelin, and even estrogens, as ethinyl estradiol\textsuperscript{(27)}. The overall effect-size for these hormonal therapies in a review was an OR of 3.11 (IC 1.39 - 6.95), thus more effective than psychotherapy alone\textsuperscript{(1)}.

The overall evidence favors treatment. In a systematic review including 69 studies\textsuperscript{(1)}, the effect-size of treated group (TG) compared to untreated (UG) was an OR of 1.7 (re-incidence of 11.1% for TG versus 17.5% for UG)\textsuperscript{(1)}). Specifically for violent recidivism, the differences were even higher: 6.6% for TG versus 11.8% for UG, an OR of 1.9\textsuperscript{(28)}. For young sex offenders, a meta-analysis by Reitzel, Carbonel (2006)\textsuperscript{(29)} included 2,986 subjects followed for five years and found that recidivism among those who had any kind of specific treatment was 7.37% (n=1,655), as opposed to 18.93% in control groups (untreated)\textsuperscript{(28)}. For females, who account for an average of only 4.6% of all sex offences across many countries, the rates of recidivism are very low: 3.19% for new sex-offences; however, as in male population, they do re-offend in other categories (6.46% for violent and 24.52% for any crime)\textsuperscript{(20)}. There is a need for specific programs of treatment addressing the female population and professionals must have in mind that risk assessment tools might overestimate the risk, given the basal low rates of recidivism\textsuperscript{(29)}.

**Discussion**

Treatment for sex offenders has strong evidence to be effective, statistically speaking. It can reduce the rates of recidivism by one third\textsuperscript{(10)}. Using risk assessment tools we can just provide a probability, but not discriminate the patient who will certainly re-offend from those who will not (false positives and the false negatives)\textsuperscript{(19)}. The question for each society is: 5% to 11% of recidivism is acceptable? Is it tolerable? We might have reached a ceiling of accuracy in risk assessment, given the characteristics and unpredictability of human behavior, however we probably still have plain possibilities to improve the treatments\textsuperscript{(18,25,26)}.

The best evidence-based treatment recommendations for sex offenders would be a well designed CBT-oriented program and hormonal therapy, since these approaches can be complementary and potentiate each other\textsuperscript{(11,18,22)}. The combination is associated with best results, as compared to monotherapy\textsuperscript{(1,18)}. However, as mentioned before, hormonal therapy is not properly regulated in Brazil\textsuperscript{(27)} and is not an option for the court, when sentencing. Of notice is the fact that cyproterone labels in Brazil approve the use in men for “pathological sexual arousal, hyper-sexuality or sexual deviance”, indicating that ANVISA, the Brazilian sanitary authority, has approved its use for sexual disorders.

For non-violent or non-“hands-on” sex offenders, serotonergic drugs are acceptable as first choice, such as serotonin selective reuptake inhibitor antidepressants. For the other categories, a first choice could be a progestogen (medroxyprogesterone or cyproterone), followed by luteinizing hormone-releasing hormone agonists or estrogens\textsuperscript{(18)}. Another important part of risk management is external control and close supervision, but effect-size of these measures need to be established.

It is important to take into account that a group of factors have to be evaluated when deciding about prognosis of sex offenders. One of them is risk assessment. There are important limitations in our capacity to predict future criminal behavior. Some well designed studies could not find predictions to be any better than chance, but the overall results favor these instruments\textsuperscript{(4,7)}. The main actuarial tools will have an effect size of about 0.67 (standardized mean difference), and SPJ tools, as SVR-20 and RSVP, will have AUC varying from less than 0.5 (null effect) to 0.9 or higher\textsuperscript{(7)}. Exemplifying, RSVP low, moderate and high risk groups, in one study, were correlated with 9%, 17% and 50% of recidivism, with significant association ($\chi^2 = 10.39$)\textsuperscript{(7)}. So, in relation to the low risk group, the high risk had a 9.5 higher risk to re-offend, however we still can not tell who will re-offend and who will not – a main problem when thinking about public safety. Attending treatment and, more important, responding to treatment can change the odds favor-
ably and should be taken into account when judging rehabilitation\cite{12,23}. Age group (young offenders offer higher risk) and subtype of offender are other very important factors, since this is a very heterogeneous population, which will reflect in a different risk profile, as discussed above\cite{6,9,28}.

**Conclusions**

Sex offenders are a very heterogeneous and complex group that raises enormous concerns and damage in the society. Comprehension of this group has to encompass psychiatric, psychological and social concepts in an attempt to understand individuals seen as dangerous with respect to control their sexual behavior. Many of them will not have a psychiatric diagnosis and will not be seen as legally insane (unchargeable / criminal commitment). Risk assessment tools have many limitations and they can give just a clue. It’s impossible, and probability will always be, to talk about no risk or risk cessation (even the subjects considered reformed could have non-reported offences). Having a low risk after successful intervention, over a certain time, can be a marker for discharge; however, we are accepting that there will still be a risk\cite{3,4,7}. And we have to decide if the risk is worth taking or not. Nevertheless, they should start to be used in Brazil, to guide court decisions. Well-structured treatment and State surveillance/ control should be offered as an option to jail, for a selected group of offenders. Surgical intervention has to be discussed and studied – some American States (Texas, California, Florida, Iowa, and Louisiana) allow patients to choose this option, in exchange for conditional release\cite{22}. The general recidivism raises a general temptaion to issue preventive correction orders for serial sexual offenders, even though most law codes and jurisprudence do not allow punishment before the crime is committed\cite{29,30}. This is something to be discussed and addressed by each society, weighting individual rights versus collective protection. Some societies have overruled that principle, using a new and peculiar “psychiatric nosology”, as in Washington, where the *Washington Community Protection Act* from 1990 allows indeterminate detention of “sexually violent predators”\cite{29}. In the UK, a special category was also created for dangerous offenders: the *Dangerous and Severe Personality Disorder*; people under this category can receive indeterminate treatment orders\cite{31}. The message for Brazilian legislators is that this topic deserves a more pragmatic approach, without idealization and false expectancies, following international examples of success and acknowledging that part of this population has a very reserved prognosis.

**References**

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