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# Methodological and ethical aspects of the sexual maturation assessment in adolescents

*Aspectos metodológicos e éticos da avaliação da maturação sexual de adolescentes*

*Aspectos metodológicos y éticos de la evaluación de la maduración sexual de adolescentes*

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## ABSTRACT

**Objective:** To analyze methodological and ethical aspects in the sexual maturation assessment of adolescents.

**Data sources:** Books and theses, articles and legislations on the Medline, SciELO, Science Direct databases, besides institutional documents of the World Health Organization and the Pediatric Societies of Brazil and São Paulo, considering the period from 1962 to 2012. The following keywords were used in Portuguese and English: “sexual maturation”, “self-assessment”, “ethics”, “objective assessment of sexual maturation”, “puberty”, “adolescent”, and “*adolescent development*”.

**Data synthesis:** The sexual maturation assessment is used in populational studies and in clinical daily care. The direct evaluation is performed by a specialized physician, whereas the self-assessment is carried out by the adolescent. This evaluation should be carefully performed in the appropriate place, taking into account the ethical aspects. The patient should not be constrained and the physician must respect the privacy and the confidentiality. Before this evaluation and independently of the used method, the adolescent should receive information and explanation about the procedure and the tools that will be applied. Furthermore, the patient has the right to want or not an adult close to him.

**Conclusions:** Validation studies showed that self-assessment is inferior to clinical assessment and should, therefore,

be performed only when the direct examination by physicians is not possible.

**Key-words:** puberty; ethics; adolescent; adolescent development; sexual maturation; self-assessment.

## RESUMO

**Objetivo:** Analisar os aspectos metodológicos e éticos na avaliação da maturação sexual em adolescentes.

**Fontes de dados:** Livros e teses, artigos e legislações encontrados nas bases Medline, SciELO e *Science Direct*, além de documentos de instituições como a Organização Mundial da Saúde e as Sociedades Brasileira e Paulista de Pediatria. Considerou-se o período de 1962 a 2012. Utilizaram-se as palavras-chave em português e inglês: “maturidade sexual”, “auto-avaliação”, “ética”, “avaliação clínica da maturação sexual”, “puberdade”, “adolescente” e “*desenvolvimento do adolescente*”.

**Síntese dos dados:** A avaliação da maturação sexual é usada em estudos populacionais e em atendimento clínico, sendo a avaliação direta realizada por médico especializado e a autoavaliação realizada pelo próprio adolescente. Deve-se realizar essa avaliação em local adequado, de forma cuidadosa e ética, não constrangendo o paciente. Deve-se sempre manter a privacidade do adolescente e respeitar a confidencialidade. Antes da avaliação, independentemente do método usado,

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o adolescente deverá ser informado e esclarecido sobre o procedimento e os instrumentos que serão utilizados, tendo o direito de querer ou não um responsável junto a ele.

**Conclusões:** Os estudos de validação da autoavaliação mostraram que esta é inferior à avaliação clínica e, por isso, deve ser realizada apenas quando não for possível o exame direto por um médico.

**Palavras-chave:** puberdade; ética; adolescente; desenvolvimento do adolescente; maturidade sexual; autoavaliação.

## RESUMEN

**Objetivo:** Analizar los aspectos metodológicos y éticos en la evaluación de la maduración sexual en adolescentes.

**Fuentes de datos:** Libros y tesis, artículos y legislaciones encontrados en las bases Medline, SciELO y *Science Direct*, además de documentos de instituciones como la Organización Mundial de la Salud y las Sociedades Brasileña y Paulista de Pediatría. Se consideró el periodo de 1962 a 2012. Se utilizaron las palabras clave en portugués e inglés: «madurez sexual», «autoevaluación», «ética», «evaluación clínica de la maduración sexual», pubertad, «adolescente» y «desarrollo del adolescente».

**Síntesis de los datos:** La evaluación de la maduración sexual se usa en estudios poblacionales y en atención clínica, siendo la evaluación directa realizada por médico especializado y la autoevaluación realizada por el adolescente mismo. Se debe realizar esa evaluación en local adecuado, de modo cuidadoso y ético, no constriñendo al paciente. Se debe siempre mantener la privacidad del adolescente y respetar la confidencialidad. Antes de la evaluación, independiente del método usado, el adolescente deberá ser informado y aclarado sobre el procedimiento y los instrumentos que serán utilizados, teniendo el derecho de querer o no un responsable junto de sí.

**Conclusiones:** Los estudios de validación de la autoevaluación mostraron que ésta es inferior a la evaluación clínica y, por ello, se debe realizarla solamente cuando no sea posible el examen directo por un médico.

**Palabras clave:** pubertad; ética; adolescente; desarrollo del adolescente; madurez sexual; autoevaluación.

## Introduction

Adolescence is the period of transaction from childhood to adulthood, which comprises the age range from 10 to 19

years, characterized by intense biopsychosocial transformations<sup>(1)</sup> and influenced by the reality of the individual, by social and cultural contexts<sup>(2,3)</sup>, and which may be experienced differently among members of the same family<sup>(1)</sup>.

“Puberty refers to the biological transition period between childhood and adulthood, ranging from individual to individual regarding the age of its onset and speed of changes, during which the secondary sexual characteristics begin to develop and the capability of sexual reproduction is achieved”<sup>(4)</sup>. Sexual maturity is a biological process and can be defined as the progression towards the mature state, when specialization and cell differentiation occur<sup>(5,6)</sup>.

The assessment of sexual maturation is important in population studies and in clinical care. Age at menarche and sexual maturation stages proposed by Tanner<sup>(7)</sup> are the most widely used methods to assess sexual maturation. The direct assessment of sexual maturation is made by a properly trained, specialized physician. Whereas on self-assessment, the individual must indicate which stage is most similar to the one he is, being more subjective, as it depends on the individual's own assessment. However, both methods have limitations and should be carried out carefully in a suitable location, from the ethical point of view, not embarrassing the patient, and maintaining the privacy of the individual assessed.

This review article examined the ethical and methodological aspects of the assessment of sexual maturation of adolescents, addressing changes that occur in puberty, methods of assessment of sexual maturation of adolescents, validation of self-assessment, and ethical factors related to the assessment.

## Method

We conducted a literature review based on national and international journals, books, and theses, besides documents from institutions, such as the World Health Organization, the Brazilian Society of Pediatrics, and the Society of Pediatrics of São Paulo, which address issues related to sexual maturation and ethical aspects involved in the process. The bases consulted were Medline, SciELO and *Science Direct*, searching for the period 1962-2012. The initial date refers to the study of Tanner<sup>(7)</sup>, who proposed the assessment of sexual maturation through stages of development. The keywords used in the search for articles, in Portuguese and English, were: “*maturidade sexual*” (“sexual maturation”), “*auto-avaliação*” (“self-assessment”), “*puberdade*” (“puberty”), “*ética*” (“ethics”), “*adolescente*” (“adolescent”) and “*desenvolvimento do adolescente*” (“*adolescent development*”), which corresponded to

the descriptors of Bireme. Besides these, we also used the term “*avaliação clínica da maturação sexual*” (“objective assessment of sexual maturation”) in the search for articles related to the Brazilian Society of Pediatrics as well as the Society of Pediatrics of São Paulo, for the greater facility in finding related articles using this term. In the search for articles, after inclusion of the descriptors altogether, approximately 300 references related to the topic were found. Soon after the analysis of the articles, we chose to use the 36 most important references, including articles, theses, and documents of the International and Brazilian Societies.

Regarding the limitations of the present review, one of them would be the fact that the *Embase* database was not used and the fact that not all articles were found in their entirety.

## Literature Review

### Puberty

Puberty is defined by a series of inter-related maturational events that promote bodily changes (pubertal growth spurt), and the development of reproductive function and of secondary sexual characteristics<sup>(8)</sup>. In this period, occurs the greatest sexual differentiation since fetal life and the faster linear growth rate since the first years of life, besides stature and weight gain<sup>(6)</sup>.

Puberty involves the development of primary characters (in females: ovaries, uterus, and vagina; in boys: testis, prostate, and spermatogenesis) and secondary characters (breasts, penis, pubic, axillary and facial hair, and voice change). In males, the first sign of sexual maturation is increased testicular volume, and in the female, breast development, and

the menarche is considered an indicator of sexual maturity, as it usually occurs in late puberty, around 12 and 13 years<sup>(6)</sup>.

During puberty, changes occur in the pattern of secretion of various hormones, and activation of the hypothalamic-pituitary-gonadal axis triggers, under gonadotropin stimulation, the secretion of sex steroids, predominantly testosterone in males and estradiol in females, responsible by morphological changes at puberty<sup>(9)</sup>.

### Assessment of sexual maturation

The sequence of pubertal events was systematized by Tanner<sup>(7)</sup>, who considered breast development in females, development of external genitalia in males, and development of pubic hair in both sexes. The criteria were numbered from one to five. This assessment may be performed by a physician with expertise in adolescents or by self-assessment, in which the adolescent identifies his or her stage of maturation based on Tanner's photographs/illustrations.

### Clinical assessment versus self-assessment

The direct assessment can only be made by visual inspection or by palpation, using comparative orchidometer (for testicles), which increase the accuracy and precision. Obtaining measures by orchidometer and palpation is important, especially in studies where there are many evaluators, since the use of these techniques associated to the standardization of assessors may minimize the error inherent in the use of multiple evaluators, increasing reliability inter e intra-evaluator<sup>(5,10)</sup>. Chart 1 presents the advantages and limitations of the two methods of assessment of sexual maturation.

**Chart 1** - Advantages and limitations of methods of assessment of sexual maturation

Method	Why use it?	Difficulties/limitations
Self-Assessment	Simplicity for population studies <sup>(11)</sup> ; useful in situations that hinder the inspection of the genitalia during the clinical examination (inadequate facilities, cultural and emotional factors, among others); Validation allows their inclusion in research protocols in which the objective assessment by medical professionals adequately trained in the method is not available or appropriate.	Factors such as methodology, culture, notions of self-image (also influenced by whether or not overweight, a condition known to be associated with changes in perception of self-image) are responsible for the variability of results in populations; It is a more subjective measure, as it depends on the patients' own self-assessment.
Medical assessment	It is a more accurate method and palpation and the use of orchidometer increase the accuracy and precision of evaluation.	May generate discomfort and embarrassment; Requires specialized doctors and suitable location.

**Chart 2** - Validation studies of self-assessment of sexual maturation

Authors	Age range, sample and place	Results
Matsudo and Matsudo <sup>(12)</sup>	174 females (mean of 11.5 years) and 178 males (mean of 13.1 years), Ilha Bela, São Paulo, Brazil	<p>Agreement between evaluator and evaluated was, respectively, for girls and boys, 60.9 and 60% (breasts and genitalia) and 71.3 and 69.7% (pubic hair).</p> <p>The agreement was lower in Tanner stages 2, 3 and 4, ranging from 23% to P4 and G3 to 83.7% for G4; Higher agreements occurred in stages 1 and 5.</p> <p>Reproducibility for evaluators and evaluated ranged from 80 to 90%.</p> <p>Authors considered self-assessment a valid technique for assessment of sexual maturation, with moderate to high validity and high reliability, it can be applied from 6 years.</p>
Schlossberger <i>et al</i> <sup>(13)</sup>	Adolescents from 11–14 years, being 46 males and 37 females, from San Francisco, California, U.S.	<p>The agreement between self-assessment and physical examination and development of pubic hair (male) was of 58% (kappa's coefficient of <math>\kappa=0.35</math>) at school and of 78% (<math>\kappa=0.66</math>) at the clinic.</p> <p>The agreement of the self-assessment of genital development at school and at the clinic was 27% (<math>\kappa=0.06</math>; <math>p&lt;0.49</math>) and 44% (<math>\kappa=0.18</math>; <math>p&lt;0.04</math>), respectively.</p> <p>The agreement of self-assessment of breast development was 59% (<math>\kappa=0.43</math>) at school and of 72% (<math>\kappa=0.59</math>) at the clinic.</p> <p>The agreement of self-assessment of pubic hair development was of 58% at school (<math>\kappa=0.42</math>) and of 75% at the clinic (<math>\kappa=0.64</math>).</p> <p>There was a trend of individuals to overestimate their development in the early stages of maturation and underestimate it in later stages.</p>
Hergenroeder <i>et al</i> <sup>(14)</sup>	107 girls from 8 to 17 years, in the metropolitan area of Houston, United States.	<p>Kappa's coefficient for medical interobserver for the evaluation of breast development was of 0.5.</p> <p>Kappa's coefficient of agreement of the medical evaluation of pubic hair was of 0.79.</p> <p>Kappa's coefficient for the validity of self-assessment of breast development was of 0.34, and for self-assessment of pubic hair was of 0.37.</p> <p>The agreement between the physician's assessment and self-assessment for breast development was low and, therefore, not reliable.</p> <p>Medical evaluation of the development of pubic hair was good, but the self-assessment was not reliable in this group of girls.</p>
Bojikian <i>et al</i> <sup>(15)</sup>	340 girls, from 10 to 16 years, participants of the "Sport Talent Project" (Instituto Ayrton Senna)	<p>The use of self-assessment by photos or drawings is valid, it had a moderate agreement with the medical assessment, and the one related to pubic hair was more effective than that of stage of breast development.</p>
Rapkin <i>et al</i> <sup>(16)</sup>	124 women from 8–18 years, Los Angeles, California, U.S.	<p>Compared the self-assessment of puberty and hormones and found correlations between pubertal stage using self-assessment and hormonal markers of pubertal development, specifically estradiol and FSH (follicle stimulating hormone) and concluded that self-assessment is useful in epidemiological studies, when the physical examination and blood collection is not feasible, due to cost, access, or psychosocial barriers.</p>

Continue...

Chart 2 - Continuation

Authors	Age range, sample and place	Results
Azevedo <i>et al</i> <sup>(11)</sup>	319 individuals, 178 outpatients (96 boys and 82 girls) and 141 (73 boys and 68 girls) from public schools (8.3–18.7 years), Natal, Rio Grande do Norte, Brazil	There was no difference between the correlations obtained in the clinic and schools. The correlations between examiners were higher than those of self-assessment, with kappa coefficient of 0.75 (0.8–0.69) for breasts/genitalia among examiners against 0.27 (0.34–0.20) and 0.29 (0.36–0.22) between the two examiners and self-assessment ( $p < 0.0001$ ).  The self-assessment should not replace the objective assessment made by trained professionals. An improvement of the method of self-assessment could allow its use in population studies.

### Validation of self-assessment

Several studies conducted the validation of the self-assessment of sexual maturation, compared to evaluation by a physician, as observed in Chart 2.

The World Health Organization<sup>(17)</sup> recommends for populations studies, the use of biological markers for the beginning and the end of growth spurt, occurring, approximately, 1 year before and 1 year after peak height velocity. For girls, it is considered menarche and stage two of breast development and, for boys, stage three of development of genitalia and change of voice tone. Some studies also assess sexual maturation in males taking into account the presence of axillary and facial hair, once they occur later, in general two or three years after the appearance of pubic hair<sup>(18,19)</sup>.

### Strategies that can minimize errors on the self-assessment method

A study performed in Thailand by Wacharasindhu *et al*<sup>(20)</sup>, showed that the accuracy of self-assessment was better when patients had more time to do it. Another factor that can improve the efficiency and reliability of self-assessment is the use of better-prepared graphic material, although two similar studies, from Martin *et al*<sup>(21)</sup> and Bojikian *et al*<sup>(15)</sup>, showed no difference in self-assessment through photos or drawings in boys, and later in girls.

Chan *et al*<sup>(22)</sup>, by comparing self-assessment performed with explanatory drawings of the Tanner stages to the objective assessment by trained medical personnel — with 354 Chinese children and adolescents from 8 to 18 years —, found evidence of the use of photos as a factor of better correlation in pubertal self-assessment. It is worth noting that improving the graphics and adding callouts is not enough, if the limited intellectual capacity still existing in a considerable portion of our population is not taken into account,

a fact that makes the development of this material a more complex task, as noted Guimarães and Passos<sup>(23)</sup>.

The greater care in previously explaining the details to the evaluator leads to more confidence in identifying the most appropriate stage of development<sup>(21)</sup>.

### Ethical considerations in the assessment of sexual maturation

Legal norms that define adolescence or what it means to be an adult are varied and end up hampering the health care of adolescents, since they prevent them from certainty regarding their rights and duties, which may cause conflicts in situations involving right to autonomy, privacy, and confidentiality<sup>(24)</sup>.

In Brazil, according to the Child and Adolescent Act (*Estatuto da Criança e do Adolescente* – ECA) (law n. 8.069, from July 13, 1990), individuals in the age range from 12 to 18 years are considered adolescents<sup>(3)</sup>. The Civil Code determines civil responsibility at age 18; however, the right to vote is given at age 16. That is, on one hand, individuals are already adults to vote at 16, but, on the other hand, only at 18 the individual can get married, establish businesses, subject to certain procedures, etc.<sup>(24)</sup>. For the World Health Organization, adolescence covers the age range from 10 to 19 years and youth, from 15 to 24 years<sup>(17)</sup>, considering young adolescents those aged between 15 and 19 years and young adults, from 20 to 24 years<sup>(3)</sup>. This variable situation regarding age range confuses the professional and the adolescent, who, sometimes, goes through different treatments for similar situations, depending on age<sup>(24,25)</sup>.

In the assessment of sexual maturation, either by clinical evaluation, or by self-assessment, cannot forget the ethical aspects involved. It is noteworthy that, prior to the assessment of sexual maturation, regardless of the method being



used, the adolescent should be informed about how the examination will take place, which instruments will be used, and about his or her right to require or not a parent or guardian beside him. It is suggested that examination is explained to the adolescent in a previous consultation and that the doctor involved in the practice of adolescent medicine (Hebiatry) takes into consideration the ethical dimensions of the physician-patient relationship in this period of life.

The importance of informed consent is noteworthy. It corresponds to the “register in medical records a voluntary decision by the patient or his legal guardians, taken after an informative and instructive process, to authorize a special medical treatment or specific procedure, aware of its risks, benefits, and possible consequences”<sup>(26)</sup>. In the case of research, the participation of the adolescent is only possible through the signature of the informed consent for minors under 18 years by himself and his parents, according to art. 3 of the Guidelines and Standards for Research Involving Humans (Resolution n. 196/96 of the National Health Council)<sup>(27)</sup>.

Good medical care, even when the outcome is unfavorable, depends on the empathy between the healthcare team, the patient, and his family. Family involvement in adolescent health issues is desirable and should be encouraged, but the limits of this participation should be well defined for the family, for the adolescent and even for the health care professional<sup>(28)</sup>. To participate in decisions about their health, patients and their legal guardians need to be clarified about the disease, the prognosis, the necessity of exams, procedures, and therapeutic options, their risks, benefits, and costs. Such information should be detailed and addressed in terms that can be understood by the patient or their legal guardians. “To document that the information was transmitted and understood is the spirit of the informed consent. It expresses respect to the right of patients or their legal guardians to decide, consciously, with respect to any act done for the purpose of diagnosis and treatment of disease”<sup>(26)</sup>. Moreover, it

is the duty of the healthcare professional to recommend the conduct that he considers most appropriate, based on the best available evidence, respecting the rights of patients and their guardians from freely choosing the best treatment and considering religious, spiritual, moral, ethical, and cultural values. Therefore, the informed consent is not a mere formality to prove quality of care by the health institutions<sup>(26)</sup>.

Chart 3 presents the ethical issues involved in the assessment of sexual maturation. Privacy is the right that the teenager has, regardless of age, to be assisted alone, in private consultation space; one should also maintain this condition during a physical examination, as a synonymous with growth and responsibility<sup>(29)</sup>. Confidentiality is defined as an agreement between the health professional and the patient, in which the information discussed during and after the consultation or interview cannot be passed on to parents and/ or guardians without the explicit permission of the teenager. Confidentiality relies on rules of medical bioethics, by moral principles and autonomy<sup>(29)</sup>.

The Brazilian Society of Pediatrics<sup>(30)</sup> highlights the importance of secrecy, confidentiality, and privacy in the treatment of the teenager: “Sometimes he or she does not want to disclose confidential information in the presence of their parents. To offer them the opportunity to talk about themselves, it is necessary that the visit always occurs in two stages, the first with its guardian and, the second, alone with the professional. The difference of the doctor-patient relationship in adolescents in relation to the child is that the former ceases to be a doctor-parent relationship and becomes a doctor-adolescent relationship. It is an ethical issue to be discussed, to the extent that the parent must give permission for the minor to be treated with secrecy and confidentiality guaranteed.”

In addition, the Brazilian Society of Pediatrics<sup>(30)</sup> also points out that the adolescent, once identified as able to assess his problem and conduct himself by his own means to solve it, has the right to be treated without the presence of parents or

**Chart 3 - Ethical issues involved in the assessment of sexual maturation**

Self-Assessment	Clinical Assessment
Explanation to the patient	Explanation to the patient
Confidentiality	Professional manner
Secrecy	Confidentiality
Privacy – suitable location	Privacy – suitable location
No embarrassment for the patient	No embarrassment for the patient
	In case it is performed in the presence of parents/guardians, it should be done only with the permission of the adolescent.

**Chart 4** - Recommendations of the Department of Bioethics and Adolescence of the São Paulo Pediatric Society (*Sociedade de Pediatria de São Paulo*)<sup>(32,33)</sup>

1. The physician should recognize the adolescent as an individual progressively capable and treat him or her differently.
2. The physician must respect the individuality of each adolescent, having a welcoming attitude centered in values of health and well being of the adolescent.
3. The adolescent, if considered able to assess his problem and conduct himself by his own means to solve it, has the right to be treated without the presence of parents or guardian during the consultation, ensuring confidentiality and implementation of diagnostic and therapeutic procedures necessary. Thus, the young individual has the right to make choices about diagnostic, therapeutic, or prophylactic uses, fully assuming his treatment. The parents or guardians will only be informed about the content of consultations, as for instance, issues related to sexuality and the prescription of contraceptive methods, with the express consent of the adolescent.
4. Family participation in the process of treatment of adolescents is highly desirable. The limits of this involvement must be clear for the family and the adolescent. The adolescent should be encouraged to involve the family in monitoring their problems.
5. The absence of parents or guardians should not prevent the medical treatment of the young individual, either in registration visit or returns.
6. In situations that are considered risky (for instance, pregnancy, substance abuse, non-adherence to recommended treatments, serious diseases, life risk or risk to the health of others) and in the case of performance of more complex procedures (e.g. biopsies and surgeries), the participation of parents or guardians is required.
7. In all situations that characterize the breach of medical confidentiality, the adolescent should be informed, justifying the reasons for this attitude.

guardians in the consultation, ensuring the confidentiality and execution of diagnostic and therapeutic procedures necessary. Thus, the young individual has the right to choose diagnostic, therapeutic, or prophylactic uses, fully taking on his treatment. Parents or guardians will only be informed about the content of consultations with the express consent of the teenager. The Code of Medical Ethics, cap. IX, Article 74<sup>(31)</sup>, states that the doctor is prohibited to “reveal patient confidentiality related to a minor, including his parents or legal representatives, provided that the child is capable of discernment, unless the non-disclosure may cause damages to the patient”.

A study conducted in the United States<sup>(32)</sup> shows that, when the right of secrecy and confidentiality is not guaranteed, most teenagers do not reveal important information. The breach of confidentiality is justified only in cases in which damage to the adolescent or others may occur. Chart 4 highlights the recommendations of the Department of Bioethics and Adolescence from the Society of Pediatrics of São Paulo<sup>(33,34)</sup> regarding the treatment of adolescents.

The ECA<sup>(35)</sup> established the priority of medical care to the adolescent, the right to autonomy, and the absolute protection of life and health of these individual, in order to allow his or her healthy and harmonious development. In no time, has ECA conditioned the access of the adolescent to these services or the right of consent by parents or guardians. The statute ensures that every child or adolescent is heard and his opinion considered, at the moment to decide on facts

involving his private life<sup>(36)</sup>. However, there are still conflicting situations, in which established norms seem to be clearly insufficient to respond to the ethical issues involved in the care of adolescents, especially regarding the assessment of sexual maturation. Therefore, professionals should assess the maturity of the adolescent regarding the understanding and the capacity to solve the problem, know the laws and the statutes, carefully document the information in the medical records<sup>(24)</sup>, and base their conduct on ethical principles, ensuring the adolescent appropriate care and quality<sup>(29)</sup>.

Thus, the statements of Saito and Leal<sup>(36)</sup> on the professional manner in assisting the teenager should be highlighted: “the respect the autonomy of the child and adolescent, which implies privacy and confidentiality, makes these individuals move from object to subject of law. Whenever it comes to privacy and confidentiality, it concerns to ethics, not to the law. The professional who acts this way does not offend any ethical precept, and should not fear any legal penalty”.

## Final Thoughts

The assessment of sexual maturation is used in studies involving adolescents, but it is also very important for clinical care. It is suggested self-assessment as a valid method when direct examination by a physician is not possible, especially in population studies. However, the validation of self-assessment studies discussed here showed that it is



inferior to the clinical assessment, and therefore, researchers should be cautious in using this method.

Whichever method is used, the ethical aspects involved in the care and research with adolescents must be considered, such as the appropriate place for the assessment and privacy, avoiding embarrassment to the individual. Furthermore, it is essential, before the assessment of sexual maturation, whatever the method used, to inform the teenager about how the examination will occur, what are the instruments used,

and to guarantee him the right to decide whether or not he wants parents beside him. It is suggested that the exam is previously presented to the adolescent in the preceding consultation. Therefore, the use of methods of assessment of sexual maturation by professionals working with young people in the process of growth and development should respect the ethical aspects. These methods can assist in estimating the biological age, provided that the results of growth and development are interpreted as a whole.

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