

PUBERTY AND ITS SIGNIFICANCE AS PERCEIVED BY PREPUBESCENTS IN CROATIA

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ABSTRACT

Prepubescent children need to be prepared for puberty in an appropriate manner including all related associations and contexts. Children should learn the required knowledge before its onset—when they are in primary school. Knowledge is gained in the process of learning and represents the level of awareness. The cognitive level of knowledge represents the amount and quality of relevant information. Adolescence is a broadly defined stage of life, in which the reproductive capacity culminates and physical growth is completed. In the period of adolescence, psychological and social changes take place along with biological changes. Puberty is a significant element of sexuality education in the global dimension. The objective of the present educational research study is to identify the level of knowledge concerning the definition and significance of puberty among primary school pupils in Croatia and in the context of other selected countries (Czech Republic, Sweden, China, Spain). The data were collected by means of a knowledge achievement test. The content of the nine test items focused on the following: concept of puberty; definition of puberty; puberty age range; knowledge about physical changes in boys and girls; knowledge

KEYWORDS:

*prepuberty, puberty, pupils,
knowledge, testing, results.*

about other changes that puberty induces; significance of puberty in human life. To identify any statistically significant differences in the pupils' responses by countries, the non-parametric Kruskal-Wallis test was used. The results suggest that prepubescents do not have the right knowledge about puberty and do not consider relevant associations and contexts in a comprehensive way. The incomplete knowledge suggests that prepubescents do not think about the significance of puberty in a comprehensive perspective but rather in various combinations of the biological, psychological and social areas.

INTRODUCTION

The research was carried out as part of a student grant competition at Palacký University Olomouc (IGA_PdF_2020_023; Cognitive and informative level of knowledge about puberty among primary school pupils in Croatia; principal investigator Doc. PaedDr. Miluše Rašková, Ph.D.). The key concept of this longitudinal educational research is the knowledge about puberty among primary school pupils in selected countries. What is the level of knowledge about puberty among primary school pupils in Croatia? Answering this question was the key focus of the project, which is built on our previous research projects in the Czech Republic, China, Spain and Sweden carried out from 2015 (IGA 2015, IGA 2017, IGA 2018, IGA 2019). In the 2020 project, our cooperation in Croatia was performed through the participation of the University of Zadar (Department for Teachers and Preschool Teachers Education; Prof. Dr. Sc. Robert Bacalja).

Puberty (Blatný, 2016; Jedlička, 2017; Langmeier, Krejčířová, 2006; Slater, Bremner, 2017; Pacher, 2017; Říčan, 2014; Thorová, 2015; Vágnerová 2000) is a significant element of sexuality education in an international context and represents an important aspect of comprehensive education of children. A number of countries not only in Europe are accredited members of the International Planned Parenthood Federation (IPPF), which defines the context of human rights and is active in the area of sexual and reproductive health. The IPPF defines sexual rights, supports the right to freedom and personal safety and cooperates with other entities to support efforts that introduce and acknowledge these rights in various countries. In 2010, the World Health Organization (WHO) drafted the Standards for Sexuality Education in Europe, 2010, the purpose of which is to help introduce a system of comprehensive sexuality education from birth. The system uses an approach based on an understanding of sexuality as an area of human potential, and helps children and young people develop the basic skills that will enable them to decide freely about their sexuality and their relationships in various stages of development. At the same time, it recommends that sexual life should be lived in a fulfilling and responsible way and supports protection mechanisms against possible risks.

Puberty (Blatný, 2016; Jedlička, 2017; Langmeier, Krejčířová, 2006; Slater, Bremner, 2017; Pacher, 2017; Říčan, 2014; Thorová, 2015; Vágnerová 2000) is nothing unusual and is a normal part of human development. This stage includes a number of changes, which influence not only the individual but also his/her en-

vironment. The role of pubescents is very difficult because of the changes to their body and psyche and their perception of the environment and themselves. Every individual has to cope with these changes. Not surprisingly, for some people this period is extremely turbulent and full of conflicts. Everyone is different with their own patterns of behaviour. For this reason, puberty shows different symptoms at different times. Therefore, it is very difficult to identify any general conclusions.

Nevertheless, children need to be prepared for puberty in time and in an appropriate manner; this includes all of the changes, associations, and contexts related to this stage of development. To be prepared for puberty in time means that children should obtain all of the necessary knowledge about puberty before its onset. This should happen during the period of pre-puberty (Blatný, 2016; Jedlička, 2017; Langmeier, Krejčířová, 2006; Slater, Bremner, 2017; Pacher, 2017; Říčan, 2014; Thorová, 2015; Vágnerová 2000) in primary school.

The system of acquired knowledge and skills is part of education and forms a holistic human personality. The personality of an educated person should match the culture of the era. An educated person should understand the context of one's knowledge, be able to use one's skills and knowledge and participate in continuous training. It should not be forgotten that education also includes the adoption of values and the development of the attitude towards the world, society and oneself. The attitudes are reflected in the ability of critical thinking and in the opinions and behaviour in practical life.

THEORETICAL BASIS OF THE RESEARCH ON PREPUBESCENTS AND THE SIGNIFICANCE OF PUBERTY

Sexuality education (Rašková, 2008; Štěrbová, Rašková, 2014) including the issue of puberty covers a large part of the human life and is intended for the present and future life. Children should be aware of the responsibility for their behaviour, should be able to recognize danger and should be able to adopt ways of safe behaviour in various situations. In addition to the basic knowledge relating to puberty including for example information about various parts of the human body, reproductive organs, anatomical, physiological and psychosocial aspects of human sexuality, etc., pupils must develop ethical attitudes to sexuality and be able to avoid risky sexual behaviour. Most information from which knowledge is generated in the school education system is of a general nature

(for example puberty, physical appearance, human development, reproductive organs, assertive behaviour, etc.) and is an important part of general knowledge (MŠMT ČR, 2013). From an educational perspective, the knowledge in the area of sexuality education facilitates coherent personality development. Knowledge (JANÍK, 2005) is gained in the process of learning and represents the level of children's awareness.

In the life of every person, puberty is an important part of human development. During puberty, the signals concerning the required hormonal changes are sent from the brain to the reproductive organs, which stimulate the growth, development of functions and other changes in the brain and other organs. In line with the hormonal process of physical changes in both genders, during which the reproductive organs mature and start to produce sex hormones (sperms or ova), changes in the physical structure (Blatný, 2016; Jedlička, 2017; Langmeier, Krejčířová, 2006; Slater, Bremner, 2017; Pacher, 2017; Říčan, 2014; Thorová, 2015; Vágnerová 2000) take place. During the period of puberty, growth is decelerated or even stopped in both genders, changes in the physical structure take place, secondary sex characteristics appear including pubic hair in the armpit, skin changes as well as the development of acne. Changes in boys further include thickening of the body and muscle growth, pubic hair on the scrotum, hair on the face and voice change. Changes in girls include hair in the pubic area, gaining female shape of the body and growth of breasts.

The period of puberty is marked not only by physical changes (Blatný, 2016; Jedlička, 2017; Langmeier, Krejčířová, 2006; Slater, Bremner, 2017; Pacher, 2017; Říčan, 2014; Thorová, 2015; Vágnerová 2000), but also significant psychological changes including becoming aware of one's personality. Puberty is a period of searching for and building one's identity. The manifestations of psychological changes in puberty include refusal of the subordinate role, which changes the social role of an individual and causes attacks against authorities including the parents and teachers. The attitude to the school and the teacher changes as well, the teacher is no longer considered a formal authority unless there is something to be impressed by. Generally, adolescent children want to participate in decision making about the matters that relate to them, they start to assess their parents and other adults in a critical way. A significant aspect in the life of an adolescent is spending leisure time. They want to spend time with their peers. Their emotional relationships start to evolve including love and affection. For some individuals, puberty may become an impulse for artistic expression, reading complex literary works, doing attractive

sports, interest in mysteriousness, romance, nature and other activities. Pubescents tend to show greater emotional instability. Their self-evaluation changes, they tend to be touchy and vulnerable. According to psychologists, emotional instability is primarily a consequence of hormonal changes. Secondly, this instability may be supported by psychological changes and changes in interpersonal relationships. In puberty, the way of thinking changes. In puberty, individuals start to think hypothetically (at the level of formal logical operations). This change affects their overall attitude to the world but also to themselves.

RESEARCH PROBLEM AND RESEARCH GOALS, RESEARCH METHOD

The premises of the longitudinal research are based on the authors' intention to examine the system of knowledge about puberty in prepubescents. The research problem (Punch, 2015) was determined in connection with the premise of our longitudinal research and was "What level of knowledge about puberty do primary school students show as children in pre-puberty?" The aim of our described research, which is part of longitudinal research primary school pupils in Croatia show a level of knowledge about puberty.

The research questions were derived from the research problem and were as follows: What is the level of knowledge about puberty among primary school children before its onset? The research question was complemented with the following sub-questions: What is the level of knowledge among primary school children that they use to define puberty? What is the level of knowledge among primary school children concerning the age range of puberty in both genders? What is the level of knowledge among primary school children concerning physical and other changes in both genders? What is the level of knowledge among primary school children concerning the significance of puberty for their lives?

The cognitive and informative level of knowledge about puberty represents the level of learning and expresses the quantity and quality of information, this is the knowledge that the pupil is to acquire or has already acquired. We have tested the cognitive level (Janík, 2005) that forms the cornerstone of every person's general education.

The composition of the comprehensive research sample was represented most by a group of primary school pupils aged 10–12.

Summary Frequency Table (DATA_2020)
Marked cells have counts > 10
(Marginal summaries are not marked)

COUNTRY	SEX boy	SEX girl	Missing Data	Row Totals
Czech		71	4	146
China	69	66	0	135
Spain	12	14	0	26
Sweden	20	22	0	42
Croatian	24	27	0	51
Missing	0	0	0	0
All Grps	196	200	4	400

TABLE 1 Structure of the research sample

The data from Croatia were collected by means of a knowledge achievement test. The test included primary school pupils of average age 12 years (72.5%); the total number of respondents was 51 (24 boys and 27 girls). The results were obtained from online testing of prepubescents in Zadar, Croatia. The level of knowledge about puberty was tested by means of nine test items. The content of the test items focused on the definition of puberty (Q1); puberty age range in both genders (Q2–Q5); knowledge about physical changes in boys and girls (Q6–Q7); knowledge about other changes that puberty induces in both genders (Q8); significance of puberty in human life (Q9). The pupils' responses in the test were coded by means of the following numbers: 2 = correct answer, 1 = partly correct answer, 0 = wrong answer.

The Kruskal–Wallis test (Hendl, Remr, 2017; Chráška, 2016) is an extension of the Mann–Whitney test for more than 2 observations. It tests the agreement of distribution functions. The test is based on order. Then replace the original values with the appropriate orders and create a sum of the order in each class. The test criterion is calculated using a formula. Testing was performed by a statistician who also selected this statistical method.

RESEARCH RESULTS AND DISCUSSION

The results concerning the level of knowledge about puberty among boys and girls in selected countries (questions Q1–Q9) have already been published (for example Rašková, Otavová, 2019; Rašková, Provázková Stolinská, 2015, 2017, 2018; Rašková, Provázková Stolinská, Vavrdová, 2015; Rašková, Vavrdová 2019 etc.)

Depend.: Score	All Groups Multiple Comparisons p values (2-tailed); Score (DATA_2020) Independent (grouping) variable: COUNTRY Kruskal-Wallis test: H (4, N = 400) = 76,76788 p = ,0000				
	Czech R: 197,66	China R: 154,63	Spain R: 353,46	Sweden R: 254,45	Croatian R: 207,62
Czech		0,018260	0,000000	0,050282	1,000000
China	0,018260		0,000000	0,000010	0,052994
Spain	0,000000	0,000000		0,005996	0,000002
Sweden	0,050282	0,000010	0,005996		0,518801
Croatian	1,000000	0,052994	0,000002	0,518801	

TABLE 2 Kruskal-Wallis test (All Groups)

Overall, the differences in pupils' point scores (questions Q1–Q9) between countries were statistically significant ($p < 0.0001$). There was also a statistically significant difference in the total point score between all countries.

None of the pupils' responses had normal distribution. Therefore, it was impossible to compare the groups of pupils (Czech x China x Spain x Sweden x Croatia) using the traditional analysis of variance but instead the non-parametric Kruskal-Wallis test had to be used.

The testing of pupils' knowledge about puberty in selected countries (Czech Republic, China, Spain and Sweden) revealed their incomplete knowledge. According to the results, the knowledge of the respondents is not completely absent but they do not understand puberty comprehensively. It was observed that they did not associate the achievement of reproduction ability, full sexual

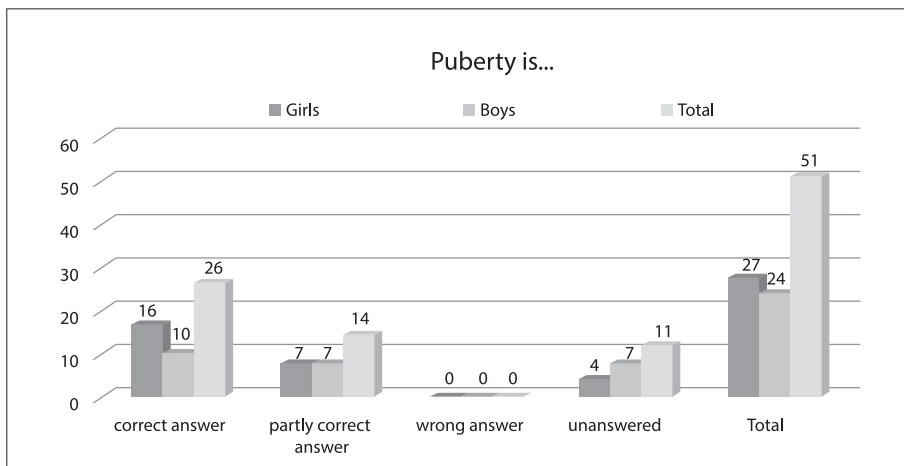


FIGURE 1 Responses of prepubescents to Q1 – Zadar, Croatia

maturity and the completion of physical growth with psychological and social changes.

Although sexuality education in Croatia has not been progressive recently and is still under the influence of the Catholic Church, the results concerning the definition of puberty (Q1) were optimistic about the knowledge among Croatian prepubescents. Although the majority of responses were correct, judging by the percentages of partly correct answers and unanswered questions, the knowledge in the area of defining puberty needs to be strengthened.

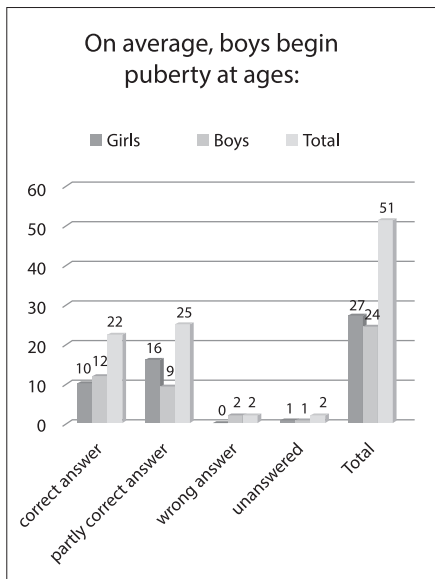


FIGURE 2 Responses of prepubescents to Q2 – Zadar, Croatia

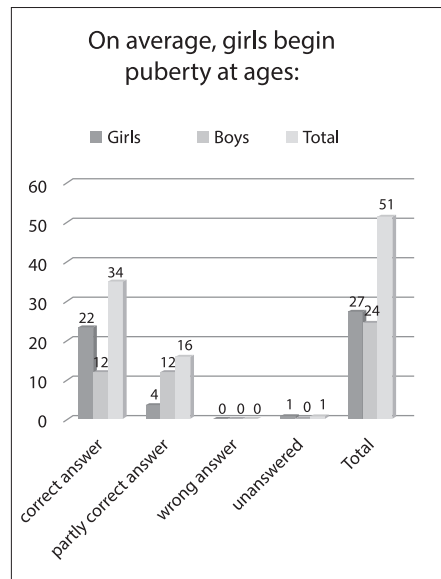


FIGURE 3 Responses of prepubescents to Q3 – Zadar, Croatia

In terms of the knowledge concerning the onset of puberty in boys and girls (Q2–Q3), the respondents gave correct or partly correct answers. Concerning the onset of puberty in both genders, Croatian respondents are knowledgeable or partly knowledgeable. This result is similar to the other countries involved in the research.

In terms of the knowledge concerning the completion of puberty in boys, a higher proportion of the Croatian respondents lack this knowledge similarly to the other countries in the research. The proportion of partly correct answers (or wrong answers) suggests that the pupils' knowledge about the completion of puberty (Q4–Q5) in both genders needs to be enhanced and explained.

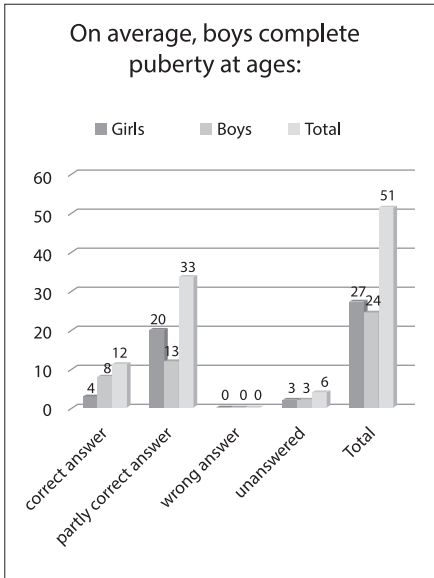


FIGURE 4 Responses of prepubescents to Q4 – Zadar, Croatia

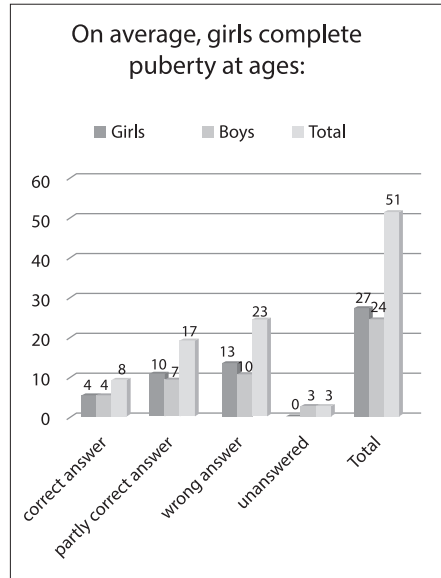


FIGURE 5 Responses of prepubescents to Q5 – Zadar, Croatia

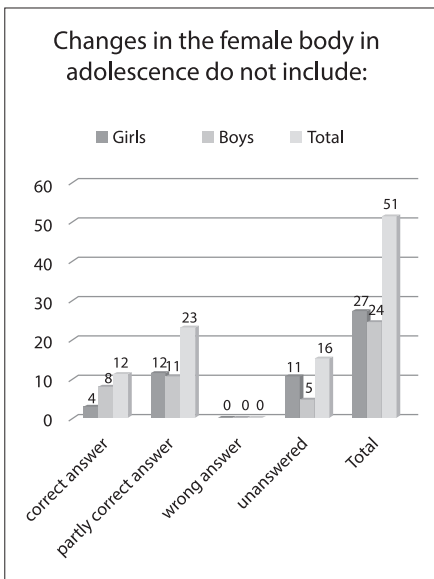


FIGURE 6 Responses of prepubescents to Q6 – Zadar, Croatia

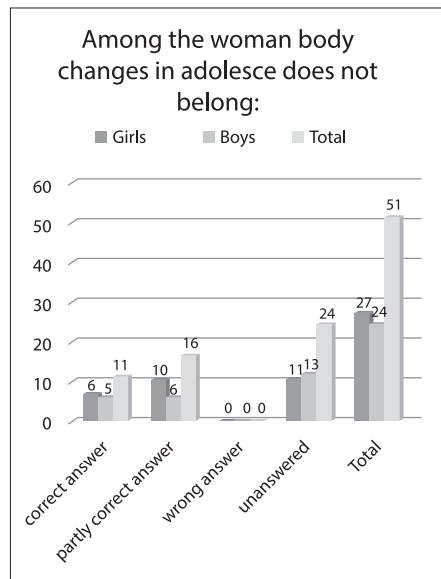


FIGURE 7 Responses of prepubescents to Q7 – Zadar, Croatia

Judging by the highest proportion of responses (partly correct), the results concerning the knowledge about changes in adolescence (Q6–Q7) among Croatian respondents correspond with the results of the Swedish, Czech and Chinese respondents. The responses suggest basic awareness in the area of physical changes during the period of puberty in both genders. These respondents suggested only various incomplete combinations of changes, which means that they do not have appropriate knowledge from a comprehensive perspective. The most frequent answers of the respondents from Spain confirmed their knowledge about the issue.

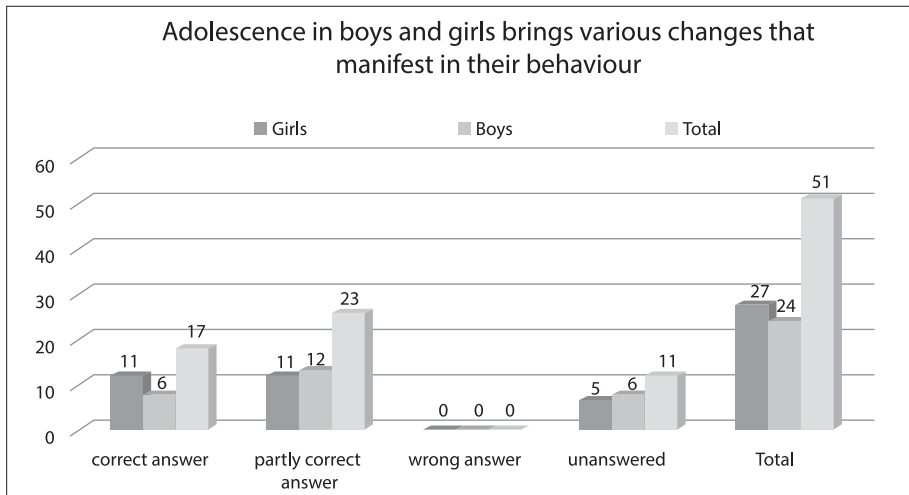


FIGURE 8 Responses of prepubescents to Q8 – Zadar, Croatia

The answers of the Croatian respondents also suggest their awareness of other changes than biological. Most of the responses were in the category of partly correct answer. The responses included only various incomplete combinations of other changes. In this question, the least knowledge was shown by the respondents from the Czech Republic.

The incomplete knowledge concerning the significance of puberty among the respondents from the Czech Republic, China, Spain and Sweden suggests that they do not think about its significance in a comprehensive perspective but rather in various combinations of the biological, psychological and social areas. However, this was not confirmed by the responses of the Croatian respondents. The respondents from Croatia showed a higher level of knowledge concerning the significance of puberty compared with the respondents from the other countries.

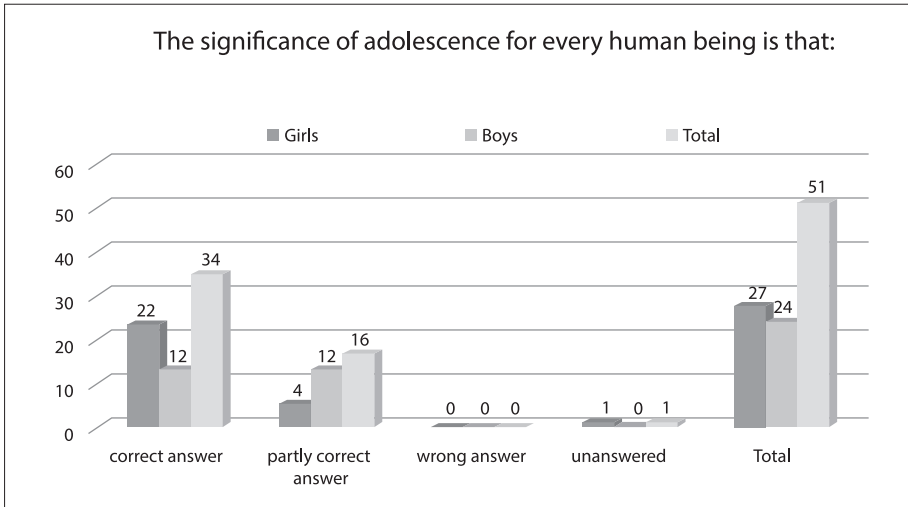


FIGURE 9 Responses of prepubescents to Q9 – Zadar, Croatia

To provide a general overview of the testing results in the countries involved, below is a comparison of the median of the pupils’ overall point scores achieved in the test by country.

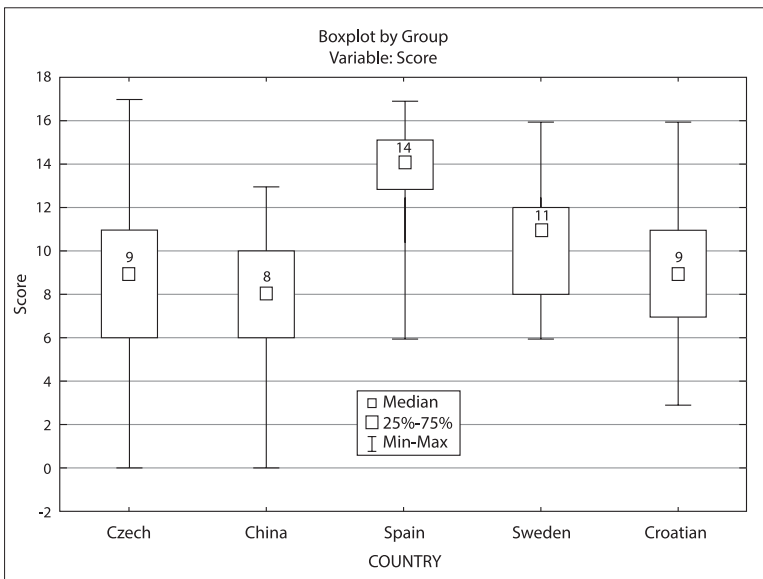


FIGURE 10 Comparison of the median of pupils’ overall point scores achieved in the test by country

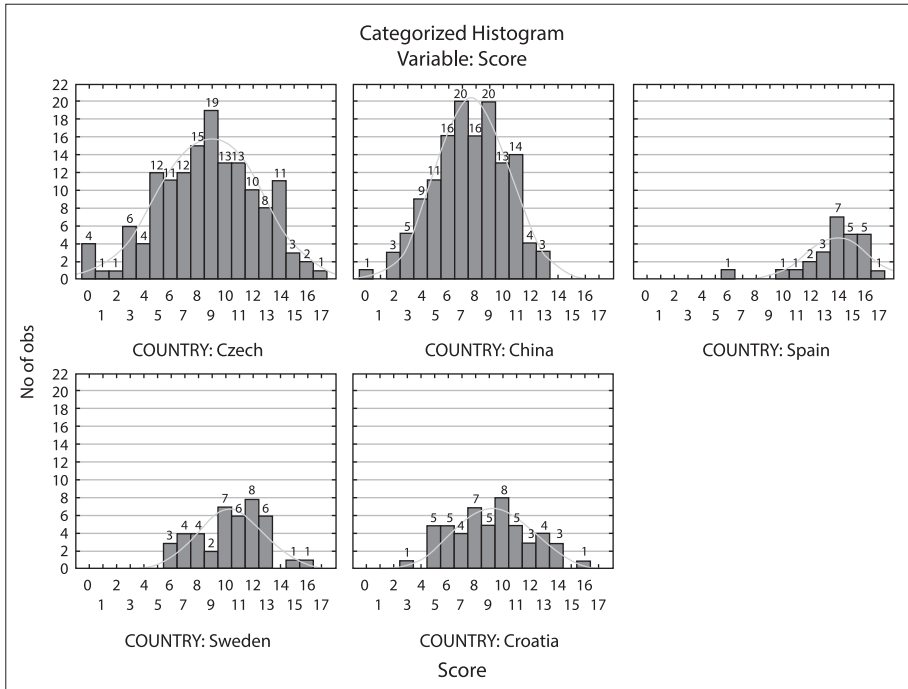


FIGURE 11 Histogram – categorized variable scores

Graph 11 shows an overview of the results using a histogram including the categorized variable scores by country.

In Croatia, institutional sexuality education faces various problems as is the case of some other European countries. After 1995, sexuality education in Croatia followed a programme developed by Dr. Hannah Klaus. The content and concept of education according to this programme was criticized. The main objection was that the programme focused merely on “chastity” based sexuality education. Most of the materials used in Croatian schools (before 2012) concerning this topic were criticised as being “inappropriate” and “not having a place in sexuality and reproductive education.” In 2012, a new curriculum was introduced which replaced the old one according to which the education of human reproduction had been intended only for girls. Now the education also includes boys. Presently, the Church in Croatia still has a strong influence on the designing of institutional education of sexuality education.

Human education should also include the knowledge about puberty. From an educational perspective, complete knowledge about puberty is part of over-

all personality development. Complete knowledge allows children to understand puberty comprehensively with respect to all changes in the biological, psychological and social areas, taking into account the specificity of both genders. The results concerning the knowledge about puberty among prepubescents in Croatia expanded and confirmed the findings collected from the respondents from the other countries involved in the research.

Naturally, these findings are especially important to teachers, who should focus their work on strengthening the development of comprehensive knowledge about puberty. Teachers' professional readiness in human sexuality is very complex, not only in terms of the development of their knowledge but also communication about human sexuality problems (for example Štěrbová, Rašková 2019). Teachers' professional qualification in terms of knowledge and didactic skills should be developed in the context of teacher training starting with undergraduate preparation and finishing in teaching mastery. The area of personality dispositions, which are also part of teachers' professional readiness, is a more complex one. This part of professional readiness cannot be "learned" but is a result of education from birth that develops throughout life.

CONCLUSION

In the 21st century, sexuality education is an indispensable element of the educational process in elementary school. It is of an interdisciplinary nature and is designed as part of the development of positive human feelings and interpersonal relationships in the context of the teacher's and pupil's deliberate activity. On a general level, sexuality education including puberty is frequently questioned by some parents and the general public as being useless and ineffective in school. Sexuality education must be delivered in schools in a qualified way (Rašková, 2018; Štěrbová, Rašková, 2018; 2019) taking into account various educational and psychological particularities of pupils and respecting humane approaches and ethical principles. In the context of general education and understanding of puberty, it is desirable for prepubescents to learn the required knowledge about puberty before its onset. In terms of education and didactic aspects, special focus is on the following: unity of the acquisition of knowledge and comprehensive personality development and learning on the basis of pupils' social experiences, which leads to the practical use of the knowledge acquired.

Although comprehensive sexuality education including the issue of puberty should be centred around the family, there is no guarantee that children will gain (provided that sexuality education does not become taboo) subjectively and socially appropriate information, attitudes and behaviour in the broadest sense of sexual behaviour. Children encounter sexual issues also in other domains of life, for example through the media, especially television, radio, internet, advertisements, books and magazines. These sources of information provide children with a large amount of picture and text information, but also hero imitation motives. Obviously, parents and all persons involved in the process of education and upbringing play an important role.

Human education should also include the knowledge about puberty. From an educational perspective, complete knowledge about puberty is part of overall personality development. Complete knowledge allows children to understand puberty comprehensively with respect to all changes in the biological, psychological and social areas, taking into account the specificity of both genders. These findings are especially important to teachers, who should focus their work on strengthening the development of comprehensive knowledge about puberty.

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PRILOZI – ORIGINAL TEST IN CROATIAN**O PUBERTETU**

Draga djeco, molim Vas popunite pitanja o pubertetu. Nemojte se potpisivati. Označite samo jedan odgovor na pojedinom pitanju.

Ja sam:

- a) dječak b) djevojčica

Ja imam (upišite): godina.

ŠTO ZNATE O PUBERTETU?**1. PUBERTET JE:**

- a) Razdoblje adolescencije u kojem genitalije sazrijevaju i počinju proizvoditi spolne hormone; događaju se promjene u našem tijelu i mentalne promjene.
- b) Razdoblje kada smo svjesni promjena u našem tijelu, naša mišljenja i ponašanje se mijenjaju.
- c) Razdoblje adolescencije, u kojem se tijelo mijenja, dječacima i djevojčicama počinje stvaranje spolnih hormona.
- d) Razdoblje kada smo bolesni, imamo razne prištiće, ljutimo se u školi i kod kuće, ne želimo ništa raditi itd.
- e) Ne znam, ne mogu odgovoriti.

2. Kod dječaka pubertet počinje otprilike u dobi od:

- a) 10 – 11 godina
- b) 12 – 13 godina
- c) 13 – 15 godina
- d) 15 – 18 godina
- e) Ne znam, ne mogu odgovoriti.

3. Kod djevojčica pubertet počinje otprilike u dobi od:

- a) 11 – 12 godina
- b) 12 – 14 godina
- c) 14 – 15 godina
- d) 15 – 18 godina
- e) Ne znam, ne mogu odgovoriti.

4. Pubertet kod dječaka završava otprilike u dobi od:

- a) 11 – 12 godina
- b) 12 – 13 godina
- c) 14 – 16 godina
- d) 16 – 18 godina
- e) Ne znam, ne mogu odgovoriti.

5. Kod djevojčica pubertet završava otprilike u dobi od:

- a) 11 – 12 godina
- b) 13 – 14 godina
- c) 14 – 16 godina
- d) 17 – 18 godina
- e) Ne znam, ne mogu odgovoriti.

6. Promjene na tijelu (njegovim fizičkim karakteristikama) u adolescenciji kod dječaka ne uključuju:

- a) Rast kose, rast mišića i promjenu glasa;
- b) Rast mišića i glasovne promjene, kožne osipe i akne;
- c) Dlake ispod pazuha, rast mišića i promjenu glasa;
- d) Promjenu glasa, rast mišića, osip na koži i akne;
- e) Ne znam, ne mogu odgovoriti.

7. Promjene na tijelu (njegovim fizičkim karakteristikama) u adolescenciji kod djevojčica ne uključuju:

- a) Dobivanje oblina i rast grudi;
- b) Promjenu glasa, rast mišića, osip na koži i akne;
- c) Dlake ispod pazuha, dobivanje oblina;
- d) Rast dojki, osip na koži i akne;
- e) Ne znam, ne mogu odgovoriti.

8. U adolescenciji dječaci i djevojčice imaju iskustva s promjenama koje se očituju u ponašanju – primjerice, ponašanju (označite primjer koji nije istinit):

- a) Događaju se značajna neslaganja s roditeljima, učiteljima, odgajateljima, trenerima i sličnim kad nam se nešto ne sviđa, s čime se ne slažemo itd. ; želite odlučiti o stvarima koje vas se tiču;
- b) Doživljavaju i uspostavljaju se prvi emocionalni odnosi (ljubavi);
- c) Provodite slobodno vrijeme sa svojim prijateljima;
- d) Branite se protiv drugih psovanjem, prebijanjem, udaranjem, tužakanjem itd.
- e) Ne znam, ne mogu odgovoriti.

9. Značaj puberteta za svaku osobu je u tome što:

- a) Značajno ćemo rasti u visini, kritički ćemo promatrati odrasle osobe, u slobodno vrijeme tražit ćemo prijatelje, sastavit ćemo pjesme, pisati o ljubavi itd.;
- b) Naša će se tijela mijenjati ovisno o tome jesmo li dječaci ili djevojčice, znat ćemo se ponašati, zanimat će nas nove stvari;
- c) Genitalije počinju stvarati spolne hormone (spermu ili jajašca) tako da u odrasloj dobi možemo imati djecu;
- d) Naše ponašanje i postupci će se promijeniti, željet ćemo odlučivati o stvarima koje nas se tiču, oblikovat ćemo vlastito mišljenje;
- e) Ne znam, ne mogu odgovoriti.

DJEČJA PERCEPCIJA PUBERTETA I NJEGOVE VAŽNOSTI U HRVATSKOJ

SAŽETAK

Djecu u predpubertetskom razdoblju treba pripremiti za pubertet na odgovarajući način, uključujući sve srodne asocijacije i kontekste, te trebaju dobiti tražene informacije dok su u osnovnoj školi. Djeca bi trebala naučiti traženo znanje prije početka razdoblja — dok su u osnovnoj školi. Znanje se stječe u procesu učenja i predstavlja razinu svijesti. Kognitivna razina znanja predstavlja količinu i kvalitetu relevantnih informacija. Adolescencija je široko definirana faza života u kojoj reproduktivna sposobnost kulminira i tjelesni rast je završen, te se događaju psihološke i socijalne promjene zajedno s biološkim. U razdoblju adolescencije događaju se psihološke i socijalne promjene zajedno s biološkim promjenama. U tom vremenu važan čimbenik je spolno obrazovanje na globalnoj razini. Cilj ove obrazovne studije je identificirati razinu znanja koja se odnosi na definiciju i značaj puberteta među osnovnoškolcima u Hrvatskoj i u kontekstu drugih odabranih zemalja (Češka, Švedska, Kina, Španjolska). Podatci su prikupljeni testom provjere znanja. Sadržaj devet ispitnih zadataka usredotočio se na sljedeće: koncept puberteta; definicija puberteta; raspon dobi puberteta; znanje o fizičkim promjenama kod dječaka i djevojčica; znanje o drugim promjenama koje izaziva pubertet; značaj puberteta u ljudskom životu. Kako bi se utvrdile bilo koje statistički značajne razlike u odgovorima učenika po zemljama, korišten je neparametrijski Kruskal-Wallisov test. Rezultati sugeriraju da djeca u predpubertetskom razdoblju nemaju pravo znanje o pubertetu i da ne razmišljaju o relevantnim asocijacijama i kontekstima na razumljiv način. Nepotpuno znanje sugerira da djeca u predpubertetskom razdoblju ne razmišljaju o značaju puberteta na sveobuhvatan način, već ga razmatraju kao spoj biološkog, psihološkog i socijalnog područja.

KLJUČNE RIJEČI:

predpubertet, pubertet, učenici, znanje, testiranje, rezultati