Coll. Antropol. **38** (2014) Suppl. 2: 105–110
Original scientific paper

Organization and Functioning of Primary Health Care for Pre-school Children in Croatia: A Longitudinal Study from 1995 to 2012

Josip Buljan[1], Gordana Prljević[2], Martina Menegoni[2] and Irena Bralić[3]

[1] Family Practice »Dr. Josip Buljan«, Velika Kopanica, Croatia
[2] Family Practice »Dr. Gordana Prljević«, Krapinske Toplice, Croatia
[3] University of Split, School of Medicine, Specialist Pediatrics' Practice »Dr. Irena Bralić«, Trogir, Split, Croatia

A B S T R A C T

Primary health care for children in Croatia are mostly provided by primary pediatricians (PP) in the urban and by family doctors in rural areas. During past decades, as a part of health care reforms, primary pediatric care experiences several changes. This study was undertaken in order to investigate the trends in organizational structure and functioning of the PPs, based on routinely collected data from Croatian Health Service Yearbooks, 1995 to 2012. The results have consistently shown a shortage of PPs in Croatia. The shortage obviously affects the average number of children per *PP; number increased from 994 in 1995, to 1556 children in 2010, which was far above the standard. The shortage of PPs is also related to the high number of visits (30 to 40)* per *PP and* per *working day. The obtained results clearly show only the trends, therefore further research is needed for a full understanding of the PHC for pre-school children.*

Key words*: primary health care, pre-school children, primary pediatricians, organization, Croatia*

Introduction

Primary health care (PHC) for pre-school children in Croatia has existed in some form since the beginning of the last century. At first it was organized as dispensaries for mother and child, and later as an integral part of the health centers responsible for the curative and preventive care for children aged 0–6[1–4]. PHC for pre-school children is regulated by law, and endorsed within the framework of Public Health, which takes into account its size, and its technical and human resource requirements[5,6]. However, in the cities, PHC for children are mostly provided by pediatricians and in more remote settlements by family doctors (FDs). All of them have a community orientation; i.e. they are responsible for the children of a particular territory. Until now, the same structure based on pediatricians and FDs has been retained in the pediatric service.

In this article we will be focusing only on the pediatric service which, as with other PHC services, has passed through many, mini health care (HC) reforms, starting from the early 1990s. Probably, the most important of these reforms is the so called, privatization[7]. Under this reform, most of primary pediatricians (PP) became independent contractors with the Croatian Health Insurance Fund (CHIF), and became responsible for the provision of health care for the pre-school children on their lists. They remain working in the same practices, firstly rented and than in concession. Free-choice of physicians, introduced by the Health Care Act in 1993, was also important reform[5]. The parents were now given the opportunity to choose a physician for their children. According to the CHIF internal regulations, the pediatricians were recommended as the physicians of first choice, and FDs were only to be selected in those places where pediatricians were not available, such as in remote villages or islands[8]. The number of children *per* pediatric team was defined by the CHIF standards, generally at the level of 1000 children with the trend of reduction to 950 children[9,10]. A Network showing the necessary number of pediatric practices (locations of the PPs' working facilities) within each geographical area was established. This was

Received for publication August 9, 2014

established in relation to the number of children in the area, and in relation to the characteristics of the area by itself, such as distances, communication facilities etc.[11]

According to the CHIF, since 1996 pediatricians have been reimbursed according to an age-adjusted capitation fee for the children on their lists[12]. The amount of the capitation fee for pre-school children has changed several times, but it has remained higher than that for other age groups, except for the over 65 years. In 2004, a fee-for service for some preventive procedures was introduced as an addition to the age-adjusted capitation fees, with the main aim of enlarging the scope of work and to reduce referrals[13]. The number of reimbursed services has been gradually increased, especially since 2012[14]. Informatization through central information system for primary health care, which might have some implications for the pediatric services, was introduced in 2008.

There has been almost no published research systematically exploring the issues around PPs, especially in relation to the HC reforms. Therefore, this study was undertaken in order to investigate the organizational structure and functioning of the PPs following the HC reforms mentioned. The main aims of the study were: 1) to determine the trends in the number and structure of the PP teams; 2) to determine the trends in the number of children *per* team, and the number of children actually receiving care; 3) to determine the trends in terms of the number of visits, examinations and referrals; 4) to estimate whether the observed trends are related to the HC reforms introduced between 1995 and 2012.

Material and Methods

The study is an observation and longitudinal population study, based on routinely collected national statistics data. The main source of data was the Croatian Health Service Yearbooks, published by the Croatian Institute of Public Health[15]. We collected data related to the pediatric service for the period 1995 to 2012 for Croatia as a whole, and for the individual counties. The data were collected in the same manner as that in which they were presented in the Yearbooks. The number of PPs, the number of pre-school children (0–6 years) on their lists, the number of children under their care, the number of visits and examinations, and the number of referrals were all collected. The percentages of children annually receiving care, the average number of children *per* pediatrician, and the average number of visits *per* child, *per* year, were all calculated. Additionally, the number of pre-school children on the PP's lists were compared with the total number of children aged 0–6, obtained from the Census from 2011[16].

Bearing in mind the restraints of geographical availability, data on the number of PPs with a CHIF contract in 2010 were collected from the CHIF database of contracting PPs' teams for the contractual period 2010–2012[17]. A comparison of the number of contracting PPs and the number of pediatric practices as determined by the Network from 2012 was made in order to establish the relationship between the PPs and the locations of their practices; that is whether the contracting PPs are located in the cities or in the rural communities[18].

The Microsoft Office programme Excel was used for the data mining. The results are presented as tables of frequencies and percentages, and the time trends are presented by linear graphs.

Results

The number of PPs decreased, from 300 in 1998, to 247 in 2008, followed by a slight increase to 270 in 2012, although 324 PPs are needed according to CHIF standard (Figure 1). There are differences in the shortages of PPs in different areas of Croatia and in the counties. The shortage of PPs is highest in Zagreb and in the Splitsko-Dalmatinska County and the least in Istarska County.

The majority of the pediatric practices are located in the cities: in 1995, 211 practices, and in 2012, 263 practices were in the cities. However, the number of practices located in the communities has increased, from 4 practices in 1995, to 15 practices in 2012.

The total number of children on PPs lists in Croatia has grown continuously during this period, from 294,265 in 1995 to 410,986 in 2012. The number of children annually receiving care has growing as well, but slightly then the total number of children (Figure 2).

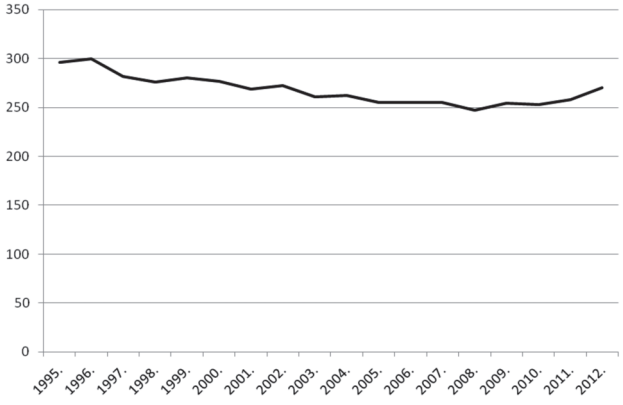

Fig. 1. Trends in the number of primary pediatricians in Croatia, 1995–2012.

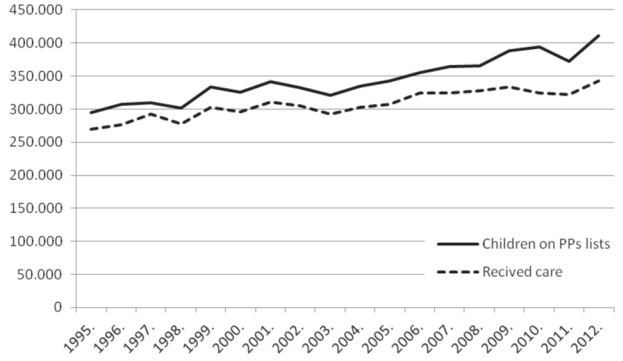

Fig. 2. Trends in the number of pre-school children on primary pediatrician's lists, and the number of children receiving care, in Croatia, 1995–2012.

The average number of children *per* PP has increased, from 994 in 1995, to 1,556 children in 2010, when it was the highest (an increase of 63%) (Figure 3). There are differences between the counties, with the greatest number of children *per* PP being recorded in the county of Zagreb (1,738 children) and the least in Istria County (1,162 children).

During the period under investigation, 82.3 to 94.5% of children on the PPs' lists were receiving pediatric care annually. The percentage decreased from 94.5 % in 1997 to 83.2% in 2012 (Figure 4).

The total number of visits and examinations in all PP's practices in Croatia slightly increased initially, and then the number of visits remained relatively stable for rest of the period under observation, but the number of examinations decreased after 2007 (Figure 5). Additionally, in the PHC for pre-school children in 2012 there were 362,465 preventive examinations, out of which 135,184 were of infants.

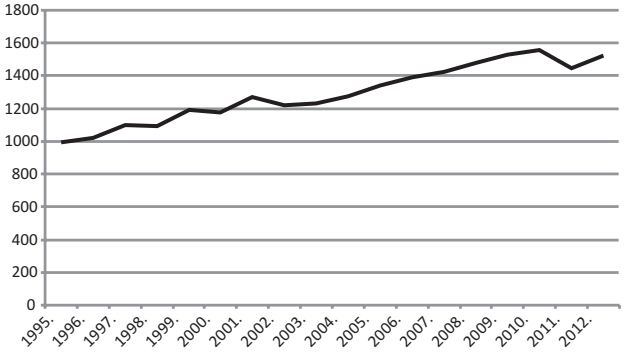

Fig. 3. The average number of children per *primary pediatrician in Croatia, 1995–2012.*

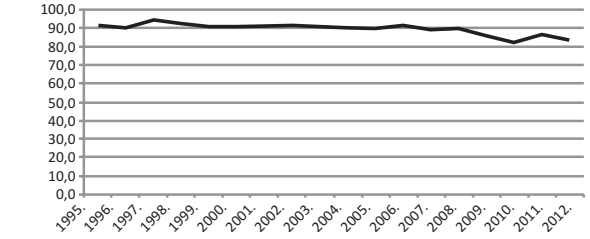

Fig. 4. The percentage of children on primary pediatrics' lists that annually received care in Croatia, 1995–2012.

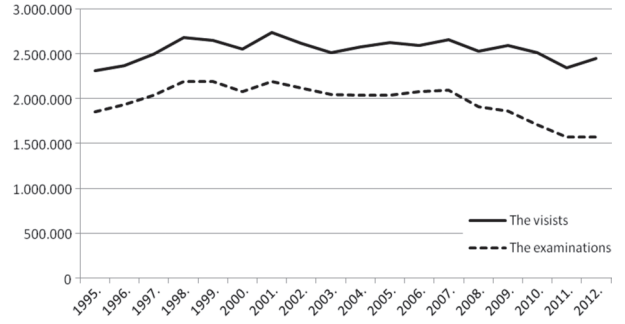

Fig. 5. The total number of visits and examinations by primary pediatricians in Croatia, 1995–2012.

The average number of annual visits *per* child to receive care first increased, from 14.0 to16.2 visits, but since 1988 has permanently decreased, to 9.8 visits *per* child in 2012 (Figure 6).

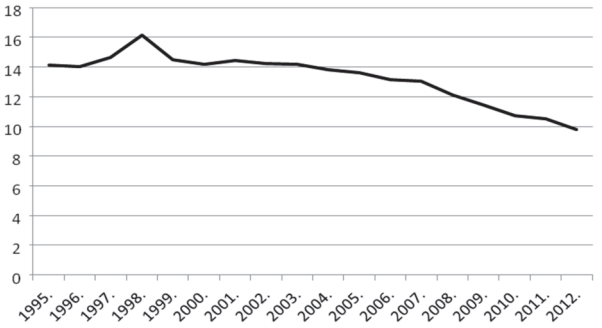

Fig. 6. The average number of visits annually, per *child, to receive pediatric care in Croatia, 1995–2012.*

The average number of annual visits *per* PP slightly increased, and then stayed stable during the entire period. The number of examinations matched the curve of visits up to 2007, but then permanently decreased, until 2012 (Figure 7). The differences between the counties were also recorded. The greatest number of annual visits *per* PP were found in Krapinsko-zagorska County (with 11,529 visits) and the smallest number in Primorsko-goranska County (6,921 visits).

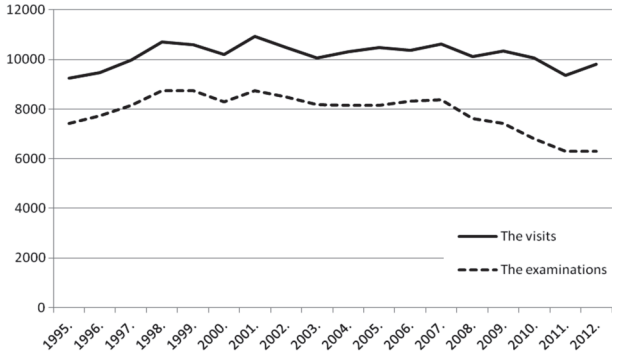

Fig. 7. The average number of annual visits per *primary pediatrician in Croatia, 1995–2012.*

The average number of visits varied from 30 to 40 visits, *per* PP, *per* day. This trend increased until 1998, and then was relative stable, decreasing slightly after 2009. The average number of examinations *per* PP also varied; with between 25 and 32 examinations *per* day, following a similar trend as the visits, but with a more sharply decreasing trend after 2007 (Figure 8).

The percentage of referrals varied between 14.1% in 1995, 18.1% in 2007, and 16.0% in 2012 (Figure 9). The great variations in the percentage of referrals were observed between the counties. In 2012, the highest percentage was found in Virovitičko-podravska County (23.4%) and the lowest in Zadarska County (11.3%).

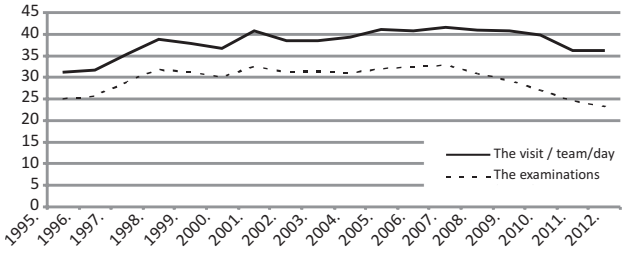

Fig. 8. The number of visits and examinations per primary pediatrician, per day, in Croatia, 1995–2012.

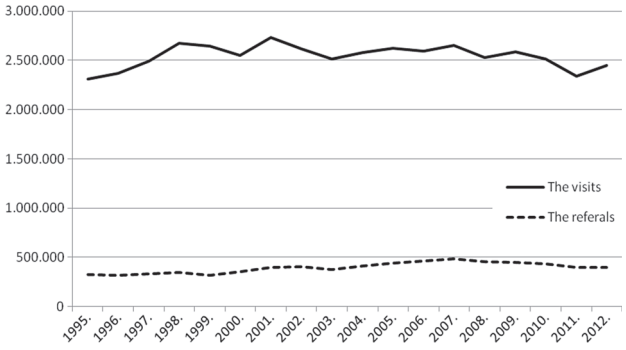

Fig. 9. The number of visits to primary pediatricans and referals to secondary health care services in Ctoatia, 1995–2012.

Discussion

The results have consistently shown a shortage of primary pediatrics (PP) in primary health care for pre-school children in Croatia. According to the Network and the CHIF standard, 324 PPs are needed in Croatia, but only 270 were found. The shortage of PPs obviously affects the average number of children *per* PP; this number increased from 994 in 1995, to 1556 children in 2010, which was far above the 1000 children *per* PP as defined by the Standard at present, and which, in future, should be reduced to 950 children *per* PP[10]. The PPs' lists mainly included pre-school children, but also some school children, who are allowed by CHIF internal regulations to remain on the pediatric lists. This explains the fact that the pediatrics' lists show more children than the Census (in 2011, there were 372,747 children on the pediatric lists, and only 336,964 children on the Census). Again, the shortage of pediatricians is also related to the high number of visits *per* PP and *per* working day. Furthermore, the pediatric practices are located mainly in the cities. Only 15 out of 270 are situated in the communities. It seems that the PHC for pre-school children in the counties is becoming even less accessible. Great differences between the counties make the situation even more complicated. In addition, the existing model is focused primarily on pre-school, and not on school children. The new morbidity among school children and adolescents, as described by the American Academy of Pediatrics, emphasizes the need for improved pediatric health care[19].

The obtained results do not permit the making of direct causal connections with the health care reforms, but some of them might be indicative of certain influences. For instance, the full quota of pediatric practices, as planned by the Network of practices, does not, in fact, exist in a physical sense. Local governments are responsible for the provision of primary health care, including the investing in physical capacities. It is difficult to say whether a lack of financial resources, or some other factors, are the reasons for their not fulfilling these responsibilities. As private practitioners, the PPs are allowed to open practices in their own facilities and then contract with the CIHI. However, the investment is too high to be covered by the regular contractual reimbursement. The introduction of additional reimbursement as a fee-for-service did not have any significant influence on referrals, one of the reasons for its introduction[13,14]. It was anticipated that the introduction of a central information system in 2008 would improve registration, but trends in number of visits and examinations, as well as referrals, have remained the same.

According to a discussion among colleagues, one reason for the shortage of PPs could be insufficient interns available to work in the PHCs. Slavonski Brod is an example of this: when the Medical Centre was abolished, a number of pediatricians did not want to work in the PHC. They found that a combination of working in hospital, where they would keep in touch with new developments, together with work in PHC could be a solution. In addition, the pediatric specialty is among the more difficult specializations and can be demanding for young doctors because of the greater responsibilities and the complications of running such a practice. Furthermore, the age-related reimbursement according to the number of children on the lists is insufficient to cover the costs of running a pediatric practice as a business[20].

It is not easy to compare the results of this study with those in the literature, because of the differences in the organization of PHC for pre-school children. According to van Esso and colleagues, out of 29 European countries (including Switzerland and Norway), pediatricians are the providers of PHC for pre-school children in 7 countries, FDs in 12, and combination of both providers in 10 countries[21]. Furthermore, a different model of primary health care for children exists in other countries[22–24]. According to American Academy of Pediatrics (AAP) a child will be seen in PHC for 10 visits during the first 2 years[25]. According to Hing and colleagues' study, the average duration of time spent with a patient during a visit is 15.2 minutes for pediatricians and 17.9 minutes for family practitioners[26].

The strength of this study is the fact that it is based on routinely collected and official national statistics data, which is used for planning at different levels. The data are routinely collected in the same manner and it is this that allows the trends to be followed for 18 years. A trend established over a long time allows one to draw a conclusion that the observed phenomenon is permanent. However, this type of study does not allow the drawing of con-

clusions about causal relationships, or conclusions regarding a deeper understanding of primary care for pre-school children. Some of the data were not collected and presented in a precise way, thereby creating limitations to the study, and also indicating the need for better quality data collection and presentation.

Regardless of its limitations, the results may help health care stakeholders at different levels. It is necessary for policymakers to seek solutions to the problem of the shortage of PPs, and to motivate and train a new generation of pediatricians to work in PHC[27–29]. This is even more important if we take into account the recommendation of the European Pediatric Association, Union of National European Pediatric Societies and Associations (EPA/UNEPSA) and the Croatian Pediatrician Association (CPA) for pediatricians to be the leaders of primary health care, so long as is organizationally possible[30–32]. One of the solutions to the shortage of PPs would be to fully implement the right of parents to free choice regarding their PHC physicians. Another solution would be to invest in primary health care facilities, in new practices, and especially in the rural communities. This would bring the services closer to the children, and help minimize the current geographical differences.

Conclusions

The results of the study indicate that the accessibility of PHC for pre-school children is compromised due to the shortage of pediatricians, the large number of children *per* pediatrician, the large number of visits, and the location of most of the practices in the cities. Large geographical variations were observed. The results obtained do not allow the making of direct causal connections with the health care reforms, or a full explanation of the observed trends, therefore further research is needed.

Acknowledgements

This study was supported by the Foundation for the Development of Family Medicine in Croatia and WHO Collaborating Centre for Primary Health Care, School of Public Health »Andrija Štampar«, School of Medicine, University of Zagreb.

REFRENCES

1. ŠTAMPAR A, Slobodna riječ, 11 (1912) 5. — 2. BULJAN J, HČJZ, 4 (2008) 14. Available from: URL: http://www.hcjc.hr. — 3. RUMBOLDT M, RUMBOLDT Z, Med Fam Croat, 20 (2012) 28. — 4. GRGURIĆ J, Paediatr Croat, 49 (Supl 1) (2005) S8. — 5. MINISTARSTVO ZDRAVSTVA I SOCIJALNE SKRBI, Zakon o zdravstvenoj zaštiti, Narodne novine, 75 (1993). — 6. MINISTARTVO ZDRAVSTVA I SOCIJALNE SKRBI, Pravilnik o minimalnim uvjetima u pogledu prostora, radnika i medicinsko-tehničke opreme za obavljanje zdravstvene djelatnosti, Narodne novine, 90 (2004). — 7 MINISTARTVO ZDRAVSTVA I SOCIJALNE SKRBI, Pravilnik o uvjetima za davanje u zakup zdravstvenih ustanova primarne zdravstvene zaštite i lječilišta, Narodne novine, 6 (1996). — 8. HRVATSKI ZAVOD ZA ZDRAVSTVENO OSIGURANJE, Pravilnik o načinu ostvarivanja prava osiguranih osoba Hrvatskog zavoda za zdravstveno osiguranje na slobodan izbor doktora medicine i doktora stomatologije primarne zdravstvene zaštite, Narodne novine, 70 (2002). — 9. HRVATSKI ZAVOD ZA ZDRAVSTVENO OSIGURANJE, Pravilnik o standardima i normativima prava iz obveznog zdravstvenog osiguranja za 1995. godinu, Narodne novine, 91 (1994). — 10. HRVATSKI ZAVOD ZA ZDRAVSTVENO OSIGURANJE, Pravilnik o izmjenama i dopunama Pravilnika o standardima i normativima prava na zdravstvenu zaštitu iz obveznog zdravstvenog osiguranja, Narodne novine, 6 (2011). — 11. MINISTARSTVO ZDRAVSTVA I SOCIJALNE SKRBI, Mreža zdravstvene djelatnosti, Narodne novine, 85 (2002). — 12. HRVATSKI ZAVOD ZA ZDRAVSTVENO OSIGURANJE, Odluka o osnovama za sklapanje ugovora sa zdravstvenim ustanovama i privatnim zdravstvenim radnicima za razdoblje od 1. travnja do 31. prosinca 2004. godine, Narodne novine, 54 (2004). — 13. HRVATSKI ZAVOD ZA ZDRAVSTVENO OSIGURANJE, Odluka o osnovama za sklapanje ugovora s zdravstvenim ustanovama i privatnim djelatnicima, Narodne novine, 30 (2005), 19 (2006). — 14. HRVATSKI ZAVOD ZA ZDRAVSTVENO OSIGURANJE, Odluka o osnovama za sklapanje ugovora s zdravstvenim ustanovama i privatnim djelatnicima, Narodne novine, 147 (2012). — 15. HRVATSKI ZAVOD ZA JAVNO ZDRAVSTVO. Hrvatski zdravstveno-statistički ljetopisi: 1995-2012 (Hrvatski zavod za javno zdravstvo, Zagreb, 1996-2013). — 16. DRŽAVNI ZAVOD ZA STATISTIKU, Popis stanovništva u 2011, accessed 12. 01.2014. Available from: URL: hptt://www.dzs.hr. — 17. HRVATSKI ZAVOD ZA ZDRAVSTVENO OSIGURANJE, Mreža ugovorenih pedijatrijskih timova, accessed 12. 01.2014. Available from: URL: hptt://www.hzzo.hr.web_ped_082013. — 18. MINISTARSTVO ZDRAVLJA, Mreža javne zdravstvene službe, Narodne novine, 101 (2012). — 19. AMERICAN ACADEMY OF PEDIATRICS, COMMITEE ON PSYCHOSOCIAL ASPECTSOF CHILD AND FAMILY HEALTH, Pediarics, 92 (1993) 731. — 20. Tiljak H, »Rat« za djecu u primarnoj zdravstvenoj zaštiti. In: Proceedings (Zbornik Hrvatski Dani Primarne zdravstvene zaštite, Labin, 2002). — 21. VAN ESSO D, DEL TORSO S, HADJIPANAYIS A, BIVER A, JAEGER-ROMAN E, WETTERGREN B, NICHOLSON A, Arch Dis Child, 95 (2010) 791. DOI: 10.1136/adc.2009:178459. — 22. FARCHI S, POLO A, FRANCO F, DI LALLO D, GUASTICCHI G, BMC Fam Pract, 11 (2010) 32. DOI: 10.1186/1471-2296-11-32. — 23. CAJIĆ D, CIRIĆ D, CAJIĆ M, SOKOLAC DZ, Med Arh, 61 (2007) 250. — 24. GARCIA-SUBIRATS I, VARGAS I, MOGOLLÓN-PÉREZ AS, DE PAEPE P, DA SILVA MR, UNGER JP, BORRELL C, VÁZQUEZ ML, Int J Equity Health, 13 (2014) 10. DOI: 10.1186/1475-9276-13-10. — 25. AMERICAN ACADEMY OF PEDIATRICS, COMMITTEE ON PRACTICE AND AMBULATORY MEDICINE, Pediatrics, 105 (2000) 645. — 26. HING E, CHERRY DK, WOODWELL DA, Adv Data, 374 (2006) 1. — 27. ŠPANOVIĆ Đ, KOSTINČER POJIĆ A, RODIN U, BRALIĆ I, KOLAREK KARAKAŠ M, Paediatr Croat, 56 (Supl 2) (2012) S6. — 28. AMERICAN ACADEMY OF PEDIATRICS COMMITTEE ON PEDIATRIC WORKFORCE, Pediatrics, 121 (2008) 855. DOI: 10.1542/peds.2008-0279. — 29. KATZ M, RUBINO A, COLLIER J, ROSEN J, EHRICH JH, Pediatrics, 109 (2002) 788. — 30. BARAC S, RUBINO A, GRGURIĆ J, GHENEV E, BRANSKI D, OLAH E, EPA/UNESPA COMMITTEE, Acta Pediatr Scan, 99 (2010) 13. DOI: 10.1111/j.1651-2227.2009.01546.x. — 31. UJEDINJENI NARODI, Konvencija o pravima djeteta. Zagreb: Državni zavod za zaštitu obitelji, materinstva i mladeži, 2001, accessed 13.06.2014. Available from: URL: http://www.mzss.hr/hr/zdravstvo_i_socijalna_skrb/socijalna_skrb/konvencija_o_pravima_djeteta. — 32. MEŠTROVIĆ J, TROŠELJ M, RODIN U, Paediatr Croat, 54 (Supl 2) (2010) S9.

J. Buljan

Family Practice »Dr. Josip Buljan«, Vladimira Nazora, 535 221 Velika Kopanica, Croatia
e-mail: josip.buljan@sb.t-com.hr

ORGANIZACIJA I FUNKCIONIRANJE PRIMARNE ZDRAVSTVENE ZAŠTITE PREDŠKOLSKE DJECE U HRVATSKOJ: LONGITUDINALNA STUDIJA, 1995.–2012.

S A Ž E T A K

Primarnu zdravstvenu zaštitu (PZZ) predškolske djece u Hrvatskoj tradicionalno su provodili pedijatri, a liječnici obiteljske medicine, uglavnom za djece na selima i otocima. Kao i svi liječnici u PZZ, primarni pedijatri su također bili obuhvaćeni mnogim promjenama u zdravstvenom sustavu. Kako nije bilo publiciranih istraživanja, ova studija je provedena s ciljem da se ispitaju trendovi kretanja u organizaciji i funkcioniranju pedijatrijske djelatnosti. Podaci su prikupljeni iz Hrvatskih zdravstveno-statističkih ljetopisa, u periodu od 1995.–2012. godine. Dobiveni rezultati su pokazali kontinuirani nedostatak od oko 50–60 primarnih pedijatara. Posljedično je porastao prosječni broj djece po jednom pedijatru, s 994 djece u 1995., na 1556 djece u 2010. godini, što je daleko izvan standarda od 1000 djece po pedijatru. Broj dnevnih posjeta je također porastao na oko 30 do 40, ne računajući preventivne posjete i preglede. Rezultati istraživanja su nedvojbeno ukazali ne trajni trend manjka pedijatara, međutim za dublju analizu pojave su potrebna dodatna istraživanja.