

Preventive Health Care for Pre-school Children in Croatia: Ongoing Trends from 1995 to 2012

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ABSTRACT

In Croatia, primary health care for pre-school children is organized by pediatricians (PPs) for children in urban and family doctors (FDs) for children in remote areas. This study was undertaken with the aim to determine the trends in preventive activities (general, targeting, and control check-ups and total visits) in both services (FDs, PPs), between 1995 and 2012. The main adapt source was the Croatian Health Service Yearbooks. According to the results, the number and the structure of preventive activities performed by PPs are relatively stable, while those performed by FDs decreased rapidly, primarily because the number of children under the care decreased. It is probable in relations with the regulations to direct the children to PPs and not to the FDs. The average numbers of all preventive activities are under the optimum. There are many similarities between FDs' and PPs', some activities were frequently performed by FDs and others by PPs'.

Key words: preventive health care, pre-school children, pediatricians, family doctors, Croatia

Introduction

What are the most effective organizational modalities of primary health care for pre-school children (0–6 years) is still a question under the discussion¹. In well-developed countries, free-choice of PHC physician for the children remains the main idea. Therefore, family doctors/general practitioners (FDs) and primary pediatricians (PPs) are the main providers of PHC for children within the European region^{1,2}.

In Croatia, PHC for pre-school children was traditionally organized by both providers: PPs for children in urban areas and FDs for children in remote areas. Prior to 2006, a community, approach in which physicians were responsible for all the children in one territory, was applied. At that time, FDs as well as PPs were employed by the health centers as salaried doctors.

After 1996, several health care (HC) reforms were introduced. The first reform was so-called privatization. The FDs and PPs became independent contractors for the Croatian Health Insurance Fund (CHIF), responsible for the provision of curative and preventive health care

for the patients on their lists way³. Free-choice of physician was the second HC reforms. With free-choice, parents were given the chance to choose physicians for their children⁴. However, by CHIF internal regulations, PPs were recommended as the physicians of first choice and FDs were only recommended in places where PPs were not available⁵. Following the introduction of the central database of publicly insured persons in 1998, it was easy to verify which patients were on the particular doctors' lists. Furthermore, the regulations were sometimes so strictly implemented that children were removed from the FDs' lists⁵. Aside from some modifications, PPs remain the first choice for curative and preventive health care for children until 2012, especially in those under the age of four. As individual contractors, FDs and PPs were reimbursed by age-adjusted capitation fees. Until 2009, the age-adjusted capitation fee for children aged 0–6 years was smaller for the children on FDs' lists than for those on the PPs' lists⁶. In 2004, a fee-for-service was introduced as an addition to the age-adjusted

capitation fees. The number of reimbursed services, including different types of counselling and advising, continued to expand until 2012⁷. The latest major HC reform which could have some influence on the results of the provision of PHC for pre-school children was the introduction of the central information system in primary health care, including family medicine and pediatric, in 2008.

In spite of HC reforms, the nature of care given to healthy pre-school children have remained, almost the same for more than five decades. It is organized through the well-baby and well-child clinics, as a regular part of the FDs' or PPs' services. The scope of the preventive activities is defined by the Plan and Program of Health Care Measures for preschool children, which is the Croatian standard for health care provisions⁸. It includes seven general well-child check-ups; four for babies (1–2 months, 3–5 months, and two in 6–11 months) and three for small children (12–13 months, 2 years, and 4 years). In 2006, an additional general check-up was introduced for 6 year olds, which resulted in a total of eight well-child check-ups. The main goals of general well-child check-ups are to follow-up on physical, psychomotor, and behavioral developments, early detection of abnormalities, and disease prevention including immunization. The main aim of control and targeting check-ups is to follow-up on children at risk or with some specific problems recognized during general check-ups. Therefore, the numbers of control and targeting check-ups are not defined. Individual counselling and advising in specific aspects of health promotion are also very common preventive activities.

Only a small number of studies exploring the issue of preventive activities in preschool children have been conducted^{9,10}. All were limited in time and scope. Therefore, this study was undertaken with the following aims: 1) to determine the trends in preventive activities (general, targeting, and control check-ups and total visits) in both services (FDs, PPs) between 1995 and 2012; 2) to make a comparison in performed preventive activities between both services; 3) to estimate whether the trends in performed preventive activities are related to the HC reforms introduced between 1995 and 2012.

Material and Methods

This is a population-observational, longitudinal study based on routinely collected, national health statistics data. The main source used in this study was the Croatian Health Service Yearbooks, published by the Croatian Institute of Public Health¹¹. The data collected is related to the preventive activities performed by FDs and PPs between 1995 and 2012, for Croatia as a whole. The data were collected in the manner they were presenting at the Yearbooks. According to the Instructions for data collection, the number of children aged 0–6 years annually receiving preventive care was presented, along with the number of general well-child check-ups, the number of control and targeting check-ups, and the total number

of visits related to prevention. The total number of preventive visits constitutes a sum of the number of general, control, and targeting check-ups, and the number of individual counselling or advising sessions. All data are presenting to the age-related groups of children; 0–2 months, 3–5 months, 6–11 months, 1–3 years and 4–6 years¹². There were no data regarding the total number of children under preventive care and data on specific age groups, therefore, we only collected data regarding the number of children on whom preventive activities were performed, children receiving preventive care.

In order to make a comparison between FDs and PPs services we calculated the average number of preventive activities (general check-ups, control and targeted check-ups and total number of preventive visits) per one child receiving preventive care, for both services and related to two age groups: babies (0–11 months) and small children (1–6 years). The age groups were approximated by dividing the total number of children under preventive care by seven (0–6 years, seven generations). The result represents the number of children in one age generations. The average numbers of preventive activities per one baby were obtained by dividing the sum of activities by the number of children in that generation (0–12 month). The same calculation was performed for a group of small children (age 1–6 years), but for 3 or 4 generations, because the number of systematic examinations in that group of children are 3 and 4 (after 2006).

The Microsoft Office package (Excel) was used for data mining. The results are presented as a table of frequencies, percentages, and time trends in linear graphs.

Results

The number of pre-school children under preventive care of FDs grew until 1999. That number was relatively stable until 2004, after which it decreased more than 50%. The number of total preventive visits, the number of general check-ups and the number of control and targeting check-ups showed the similar trends like the number of children. In the beginning all trends increased, thereafter decreased. Only the number of control and targeting check-ups sharply increased after 2009 (Figure 1).

The total number of pre-school children under pediatric preventive care slightly decreased during the entire follow-up period, especially after 2010. The trends in general check-ups and total preventive visits are similar to the trend of the number of children. However, the number of control and targeting check-ups rapidly increased after 2008 (Figure 2).

The average numbers of general check-ups per one child performed by FDs are lower (around 0.9) than those performed by PPs (around 1.1). But the average numbers of control and targeting check-ups and preventive visits per one child are almost the same in both services (Figure 3).

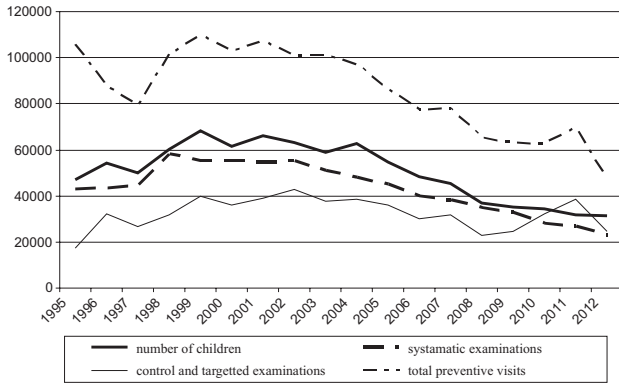


Fig. 1. Trends in the number of pre-school children under the FDs' preventive care, the number of general check-ups, the number of control and targeting check-ups and the total number of preventive visits in Croatia, 1995–2012.

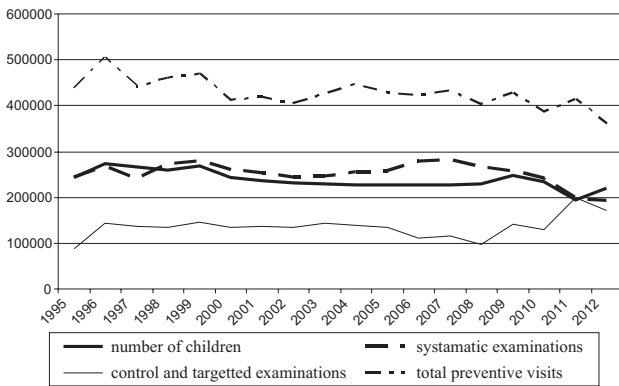


Fig. 2. Trends in the number of pre-school children under pediatric preventive care, the number of general check-ups, the number of control and targeting check-ups and the total number of preventive visits in Croatia, 1995–2012.

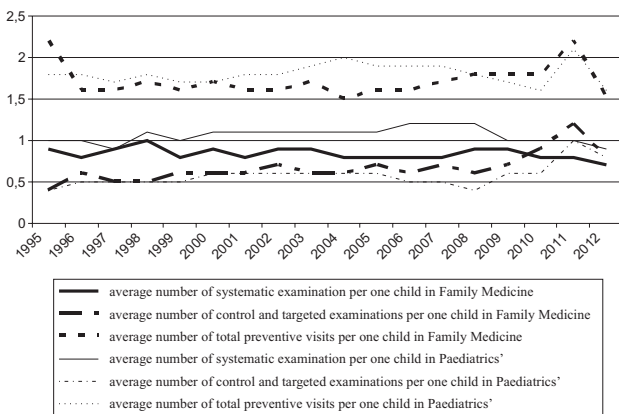


Fig. 3. Trends in the average number of general check-ups, control and targeting check-ups and the number of preventive visits performed by FDs and by PPs in Croatia, 1995–2012.

The number of general check-ups for children receiving preventive care by FDs increased until 2002. This trend was followed by a rapid decrease until 2012. The trends in general check-ups regularly scheduled to the children's age are almost the same for all age groups (Figure 4).

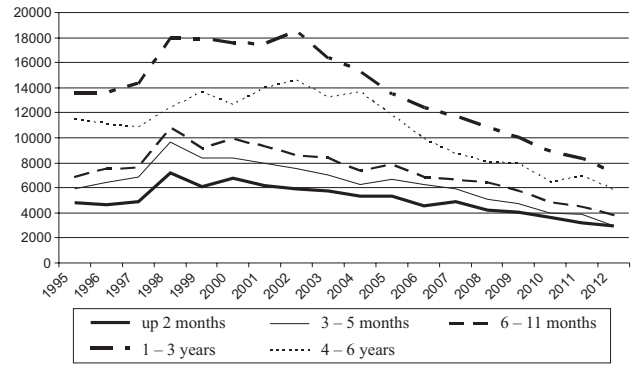


Fig. 4. Trends in general check-ups for pre-school children receiving preventive care from FDs due to the children's age, in Croatia, 1995–2012.

The number of general check-ups for children receiving preventive care from PPs decreased from 1995–1997, followed by a relatively stable trend until 2008, after which it decreased again until 2012. The trends in general check-ups regularly scheduled to the children's age are almost the same for all age groups (Figure 5).

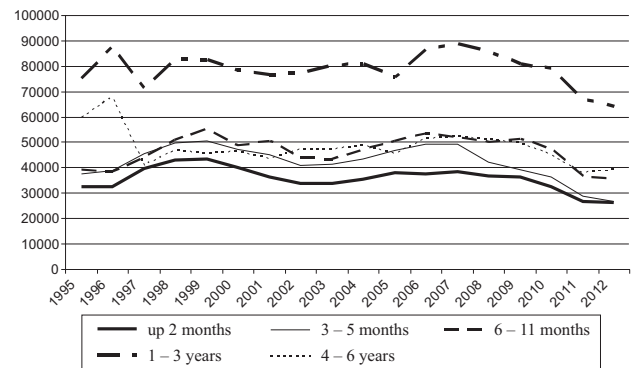


Fig. 5. Trends in general check-ups for pre-school children receiving preventive care from PPs, due to the children's age, in Croatia, 1995–2012.

The average number of general check-ups per one child aged 1–11 months performed by FDs is lower (around 2.8) than the number performed by PPs (around 3.5).

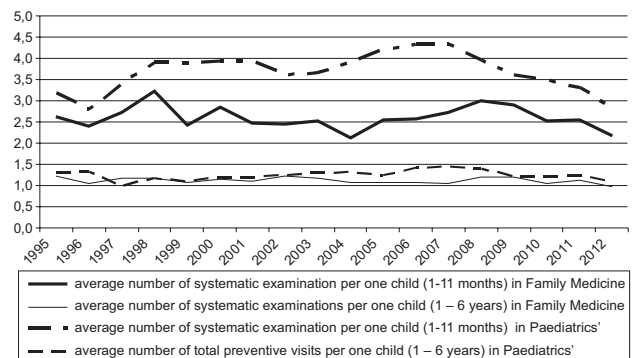


Fig. 6. Trends in the average number of general check-ups performed by FDs and PPs per one child, in relation to age groups 1–11 months and 1–6 years, in Croatia, 1995–2012.

Both trends having by-modal curve, with pick in the years 1998 and 2008. However, the average numbers of general check-ups per one child aged 1–6 years are almost the same (around 1.25) in both services and with the same, stable trends (Figure 6).

The number of control and targeting check-ups for children receiving preventive care by FDs increased from 1995–2000, then decreased until 2008, after which it rapidly increased again. A particular increase was observed within groups of children aged 1–3 and 4–6 years (Figure 7).

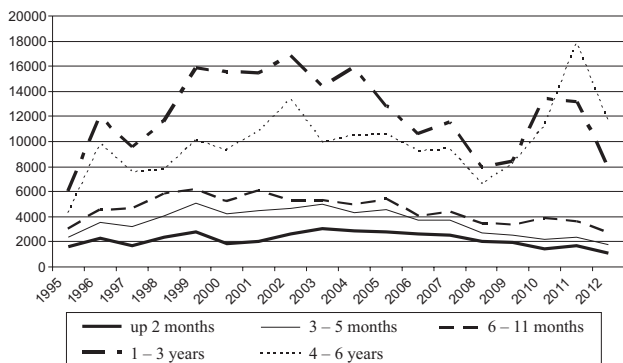


Fig. 7. Trends in control and targeting check-ups for children receiving preventive care by FDs due to the children's age, in Croatia, 1995–2012.

The number of control and targeting check-ups for children receiving preventive care from PPs slightly increased between the years 1995 and 1996, followed by relatively stable trends until 2004, then slightly decreased. The number then rapidly increased again after 2008. A particular increase was observed within groups of children aged 1–3 and 4–6 years (Figure 8).

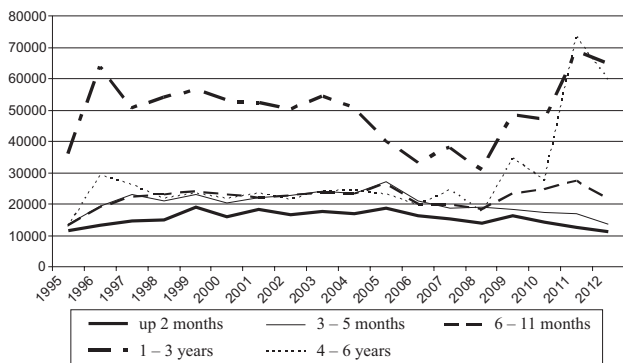


Fig. 8. Trends in control and targeting check-ups for children receiving preventive care by PPs due to the children age, in Croatia, 1995–2012.

The average number of control and targeting check-ups per one child aged 1–11 months is slightly higher in pediatric services (1.5–2.0 check-ups). However, within the age group 1–6 years old, the average number of control and targeting check-ups per one child is slightly higher in FDs services (around 1.0 check-up), with a rapid increase since 2008 (Figure 9).

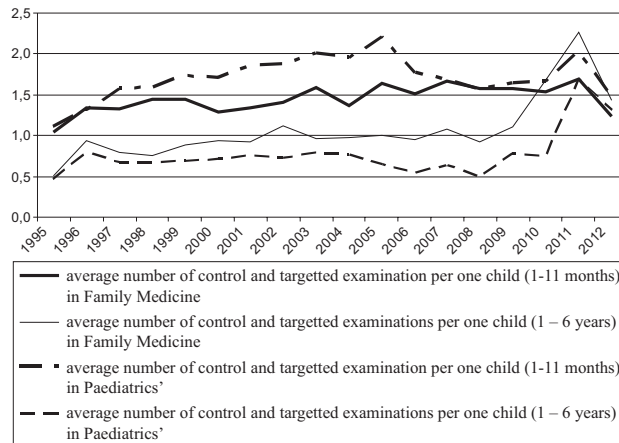


Fig. 9. Trends in the average number of control and targeting check-ups per one child performed by FDs and PPs in relation to the age groups 1–11 months and 1–6 years, in Croatia, 1995–2012.

Discussion

According to the results of this study, the number and the structure of preventive activities performed by PPs exhibit the relatively stable trends. However, the amount of preventive activities performed by FDs decreased rapidly, especially after 2004, mainly because the number of children receiving preventive care decreased. Furthermore, the results indicate that certain health system reforms could influence the scope and structure of preventive activities for pre-school children in both services. After the introduction of the restrictions on free-choice of FDs, the number of children under the FDs' care continuously decreased. This decrease in care was especially notable after 1999, when restrictions could be easily controlled by the central information system. It seems that the age-related reimbursement, which was gradually changed to higher amounts from 1996 to 2009, did not have any influence. The trends in the total amount of preventive activities in that time were stable for PPs' services but decreased for FDs' services. The increase in control and systematic check-ups for both services, and in total preventive visits in FDs' services after 2008, could be explained by the introduction of the central information system and more detailed registrations of patients and procedures. However, it is not clear whether the introduction of the fee-for-service reimbursement for some procedures, especially those introduced in 2010, had some influence on this increase. It is well-known from the literature that the fee-for-service may have had some influence on the short-term service increase¹³. Therefore, it would be worthwhile to follow future trends.

The results indicated that the average numbers of all preventive activities are under the optimum. It was planned by the Plan and Program of Health Care Measures, to have 4 general well-child check-ups for children aged 1–11 months, but the average obtained number varies from 2.5 to 4.0. For children aged 1–6 years, it was

planned to have 3 or 4, but the average obtained number was around 1.5. The results also indicated that there are many similarities between FDs' and PPs' services. Some preventive activities were frequently performed by FDs and others by PPs'. More general check-ups were performed by the PPs, especially in children aged 1–11 months, and more control and targeting check-ups were performed by FDs in children 1–6 years old.

The slight underperformance in both services could be explained by the overload of patients on the lists. The number of patients on the FDs' lists is more than 20% higher than the standard and in paediatric services the number is even higher – around 40%^{14,15}. An overload in curative visits for both services is even higher. In FM, the average number of daily visits is between 33 and 55. In pediatric services, the average number of daily visits is between 30 and 40^{15,16}. It is also known from the literature that the huge workload could have influence on the under-provision of some services lists¹⁷. Furthermore, under use of children's preventive services is reported in other literature^{18,19}. The level of compliance is related to more than just the health service characteristics, it is also related to the patient's characteristics, such as level of education, poverty and some cultural characteristics^{20,21}. It should also be noted that in the last decade, parents' attitudes about immunization (for prevention of diseases in children) have become increasingly negative in Croatia.

The fact that this study is based on routinely collected data has some strength and some limitations. One of the strengths is the fact that the data are official, national health statistics, collected and presented according to international standards. Furthermore, the length of time over which the data were collected allows for follow-up the trends and to make a conclusion that the trends in preventive activities for pre-school children are permanent, not contemporary. The limitations, on the other hand, include the fact that it is not possible to get deep inside, especially to explain the influence of the introduced HC reforms. It was also not possible to confirm the exact number of children on the FDs' and PPs' lists related to the age, so we used approximate calculations for the children ages. Those and other not-so-precise registration data should be improved. Some changes in the registration of preventive activities in electronic records from 2011, in both primary health care services, could in-

fluence data reliability. Sudden trend changes, like significant increases in control preventive check-ups in 2011, require further careful monitoring and data quality control.

Aside from those limitations, the study results should be taken into the consideration by stakeholders in the future planning of the provision of preventive health services for pre-school children. It would be necessary to allow parents to realize their legal rights regarding free-choice of physician for their children²². Furthermore, the policymakers should not place so much importance on reimbursements, but should instead take into consideration a lack of FDs and PPs, and consecutively the overload of patients and heavy workload that exists for both services. They should open a space for new FDs and PPs to enter the PHC. FDs as well as PPs could also make preventive activities a priority or include other team-members, especially educated nurses, in their provision^{23–26}. However, the new researches are need for »evidence-based« understanding of the preventive care for pre-school children.

Conclusions

The results indicated that the trends of preventive activities differ between the FDs and PPs services. The FDs' service trends declined while the PPs' services remained relatively stable. The results also indicated that the average numbers of all preventive activities in both services are less than an optimum. Some preventive activities were frequently done in FDs and others in PPs services. Many of these differences are not easily recognizable and further investigations are needed. There are some indications on the influence of HC reforms on the scope and structure of preventive activities, especially decreased number of pre-school children in FDs' services, but deeper analysis 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.

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TREND OVI KRETANJA POKAZATELJE O PREVENTIVNOJ ZAŠTITI PREDŠKOLSKE DJECE U RH U PERIODU 1995–2012: USPOREDBA POKAZATELJA IZ DJELATNOSTI OM I PEDIJATRIJSKE DJELATNOSTI

SAŽETAK

Primarnu zdravstvenu zaštitu predškolske djece u Hrvatskoj provode primarni pedijatri (PP) u urbanim sredinama, a liječnici obiteljske medicine (LOM) na selima i otocima. Cilj ovog istraživanja je bio utvrditi trendove kretanja preventivnih aktivnosti koje provode PP i LOM u periodu od 1995–2012. Podaci su prikupljeni iz Hrvatskih zdravstveno-statističkih godišnjaka za taj period. Rezultati su pokazali da su trendovi preventivnih aktivnosti koje provode PP relativno stabilni za razliku od LOM gdje imaju tendenciju opadanja. To je prvenstveno vezano sa smanjenjem broja djece u njihovoj zaštiti, najvjerojatnije zbog zabrane upisivanja djece na njihove liste. Što se tiče prosječnog broja preventivnih aktivnosti po jednom djetetu one su u prosjeku nešto manje od preporučenih, najvjerojatnije zbog velikog opterećenja poslom u obje djelatnosti. Međutim, nije uočena razlika, neke aktivnosti češće provode PP, a druge LOM. Istraživanje je pokazalo da LOM mogu jednako kvalitetno provoditi preventivu zaštitu predškolske djece.