



NEW INSIGHTS INTO DEVELOPMENT OF MATERNITY HOSPITALS IN THE REPUBLIC OF CROATIA AFTER WORLD WAR II: OUTPATIENT MATERNITY DEPARTMENT IN KLANJEC, HRVATSKO ZAGORJE, CROATIA

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SUMMARY – In the area of today's Krapina-Zagorje County, after World War II, there were three outpatient maternity departments (OMD) in Krapina, Klanjec and Pregrada, making a considerable step forward in public health improvement. The first and biggest OMD was located in the Klanjec Public Health Center. In parallel with establishment of the maternity hospital (MH) in Zabok, all OMDs throughout today's Krapina-Zagorje County were closed. The aim of our research was to present the activities of Klanjec OMD (KOMD) and show its impact on perinatal health. Data on KOMD activities were obtained from the Birth Registry. Major obstetric procedures, including delivery by cesarean section, were not performed in KOMD. Based on the above, numerous transports of women in labor and postpartum transports were organized to maternity wards in large centers. The most common cause for transport were transports during childbirth caused by prolonged labor. In conclusion, organization of OMD in the area of today's Krapina-Zagorje County significantly im-

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proved perinatal care in the 1950s. It was followed by gradual closure of OMD which could not meet the newly set spatial, material and personnel demands, along with the establishment of maternity hospitals in general and university hospitals. The trend of perinatal and maternal mortality reduction in the Zagorje region that began with the establishment of inpatient maternity department at the Zabok Hospital continues to this day.

Keywords: *Outpatient maternity department; History; Croatia*

Introduction

Reproduction is one of the most important components of human evolution. Croatia was one of the countries which had high maternal mortality after World War II, estimated to 168 *per* 100,000 live births, while perinatal mortality was 38,8 *per* 1000 live births¹. These results correlated with overall social development, and organization and budget of the health-care system. In the area of today's Krapina-Zagorje County, after World War II there were three outpatient maternity departments (OMD) in Krapina, Klanjec and Pregrada, which was a considerable step forward to improve public health. The first and biggest OMD was in the Klanjec Public Health Center, nowadays Krapina-Zagorje County Health Center, owned by the government of Klanjec (Fig. 1), operating from 1960 until 1972. The first inpatient Department of Gynecology and Obstetrics was organized in 1974 in Zabok within Cvjeta Huis Medical Center, which became part of the Zabok General and Veterans Hospital in 1992. Zabok OMD at the Zabok General



Fig. 1. Maternity hospital in Klanjec at the end of the 1960s (medical staff standing in front of the building of the maternity hospital).

Hospital founded in 1967 became inpatient maternity department (IMD) in the mid-1980s (Fig. 2), which resulted in substantial improvement of perinatal health in the region. After establishment of the IMD in Zabok, all OMDs throughout today's Krapina-Zagorje County were closed¹⁻⁵.

The aim of the paper is to show how the organization of Klanjec OMD (KOMD) in Zagorje area significantly influenced perinatal health in terms of maternal and neonatal health indicators. This research was presented in 2018 as the pioneering investigation on the activities of KOMD at the 18th Scientific Conference entitled The People of Rijeka in Medical History¹⁻⁵.

Materials and Methods

Data on KOMD activities were obtained from the Birth Registry. Since almost half a century passed from the beginning/cessation of work of KOMD, all medical staff who used to work there passed away. The last head of KOMD was Dr. Berigoj Ujević, a physician, gynecologist whose interesting stories were a very important source of information, as written materials were not available. Dr. Ujević shared his stories with us in 2018, and in 2019 he regretfully passed away.

Results

According to the Birth Registry, the first delivery in the KOMD took place on April 2, 1960, at 2:30 PM. A boy was delivered, birth weight 3300 g and birth length 52 cm. The last delivered baby in the KOMD was a baby boy born on July 21, 1972, at 24 PM, birth weight 3300 g and birth length 49 cm. There were 2089 hospital admissions registered in the Birth Registry Protocol of KOMD during the



Fig. 2. Building of the maternity hospital in Zabok in 1967.

12-year period, out of which 86.5% were deliveries and 14.5% were other conditions such as complications of pregnancy, miscarriages, and some other gynecologic disorders. The number of hospital admissions, births, and newborns, and distribution of mothers according to age and parity and of newborns according to birth weight at KOMD, Krapina-Zagorje County, during the 1960-1972 period, are shown in Table 1.

As shown in Table 1, out of 2089 hospitalized patients, 1806 (86.5%) were pregnant women in labor. Most of those 1806 pregnant women, i.e., 1530 (80.4%) women belonged to the group of farmers, workers and housewives. Out of 1806 mothers, 782 (43.3%) were aged 24 and younger, while only 441 (24.4%) were between 31 and 40 years. Parity of pregnant women was not available for the year 1960, and it was noted for only 6 out of 156 women in the year 1962. From the data available, it is concluded that more than half of the women were giving birth for the second and more times. Out of 1806 deliveries, 1824 newborns were born, which means that 18 (0.5%) pregnancies were twins. Out of 1806 births, breach presentation was recorded in 6 (0.33%) cases. Delivery of twins and infants in breach presentation occurred at KOMD because it was not possible to transfer patients to the hospital maternity ward.

There were 51.4% baby boys. In 41.7% of newborns, birth weight was between 3001 and 3500 g, while the percentage of newborns with birth weight of 2500 g and below was 4.2%, and the percentage of infants with birth weight above 4001 g was 9.2%.

All newborns were checked and cared for by the midwives and/or attending physician during delivery. At that time, BCG vaccination against tuberculosis was not obligatory but in the years 1964 and 1965, 27 (14.3%) newborns were vaccinated. Prevention of hemorrhagic disease of newborns by vitamin K application and prophylaxis of neonatal ophthalmia were not practiced at that time.

There were 127 (6.1%) transports out of 2089 hospitalizations from KOMD in the twelve-year period. Out of 127 transports, 90 (70.9%) were women in labor, 17 (13.4%) postdelivery transports, 15 (11.8%) neonates, and 5 (3.9%) women after miscarriage. The institutions to which the patients were transported were as follows: 80 (63.0%) women were transported to Brežice General Hospital in Slovenia, 32 (25.2%) women were transported to Sveti Duh General Hospital in Zagreb, and 15 (11.8%) neonates were transported to Zagreb University Hospital Center in Zagreb. Indications for transfer of the women were prolonged delivery, abnormal fetal lie, narrow pelvis,

Table 1. Number of hospital admissions, births, and newborns and distribution of mothers according to age and parity, and of newborns according to birth weight at Klanjec Outpatient Maternity Department, Krapina-Zagorje County, 1960–1972

Year		1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	Total
Number of	Hospitalizations	117	171	198	212	175	205	193	180	157	140	141	131	69	2089
	Births	103	143	153	176	142	152	170	157	155	128	140	126	61	1806
Maternal age (years)	<18	3	4	1	1	4	-	3	2	3	4	5	8	5	43
	18-24	38	53	59	71	58	53	74	61	74	43	68	59	28	439
	25-30	39	49	55	57	49	49	48	49	34	39	40	38	17	563
	31-40	21	36	38	46	28	49	43	44	39	40	27	20	10	441
	>41	2	1	-	1	3	1	2	1	5	2	-	1	1	20
	Total	103	143	153	176	142	152	170	157	155	128	140	126	61	1806
Parity	I	-	-	3	46	54	42	60	66	63	42	49	43	25	493
	II	-	-	2	40	37	46	47	53	53	50	47	36	22	433
	III	-	-	1	21	15	27	16	21	20	16	8	14	5	164
	IV>	-	-	-	8	11	26	11	10	18	10	16	10	4	124
	Total	-	-	6	115	117	141	134	150	154	118	120	103	56	1806
Number of newborns	Male	65	75	94	81	62	89	74	92	69	60	75	64	28	928
	Female	39	71	62	96	81	65	98	65	87	69	66	64	33	896
	Total	104	146	156	177	143	154	172	157	156	129	141	128	61	1824
Distribution of newborns according to birth weight (g)	≤2000	-	6	-	-	-	-	4	1	3	1	2	-	-	17
	2001-2500	2		7	5	6	6	3	3	9	5	3	9	2	60
	2501-3000	15	16	18	25	25	11	21	23	27	23	12	21	7	244
	3001-3500	51	48	58	69	58	64	76	71	68	45	67	49	29	753
	3501-4000	25	51	52	54	46	61	58	50	38	48	48	34	17	582
	>4001	11	25	21	24	8	12	10	9	11	7	9	15	6	168
	Total	104	146	156	177	143	154	172	157	156	129	141	128	61	1824

severe postpartum hemorrhage, adherent and defective placenta, and severe lactation mastitis.

Out of 1806 women giving birth in the twelve-year period, 20 (1.1%) underwent minor obstetric operations. The most common operation was episiotomy performed in 13 (0.71%) out of 1806 women, while perineal ruptures were sutured in 6 (0.33%) women, and one woman underwent manual placental lysis.

According to our retrospective data, 11 (0.6%) out of 1824 newborns died in the first 28 days of life, while there were no stillborn babies. This gives a perinatal mortality rate of 6.0 *per* 1000 newborns, which is probably underreported because we did not have data on the outcome of 15 transported neonates.

Location and Staffing

The KOMD with 15 beds was located in the left wing of the Klanjec Health Care Center building. Most of the patients coming to the KOMD were from Klanjec and its surroundings, although some patients lived in the neighboring municipalities. Due to difficult socioeconomic conditions at that time, it was common to bring mothers in labor to the KOMD in wooden carts pulled by cows or less often by horses. There were no paved roads, cars or other motor vehicles.

The KOMD staff consisted of several domicile midwives who were attending births. For managing complicated births, midwives were supposed to ask general practitioners working in the Klanjec Health Care Center. One of them was Dr. Berigoj Ujević (1939-2019) who worked at the Outpatient Clinic of the Klanjec Spinning Mill, and became director of the KOMD a few years before its closure. Dr. Ujević was specialized in obstetrics and gynecology to become the first specialist at KOMD at that time. Unfortunately, he moved from KOMD to the Sveti Duh General Hospital, where he became one of the most prominent Croatian gynecologists and one of the pioneers of ultrasound diagnostics in gynecology and obstetrics in the Republic of Croatia⁵.

At KOMD, Dr. Ujević was succeeded by Dr. Radoslav Marić, who specialized obstetrics and gynecology at the Zagreb University Hospital Center in Zagreb. Due to political reasons and disagreements with the commu-

nist regime of former Yugoslavia, Dr. Marić continued his education in the United States, where he later practiced gynecology and lobbied for Croatian independence.

Due to the lack of space and staffing, cesarean sections and other operations were not performed at KOMD (Fig. 3), and this was the reason for transportation of patients in labor to other neighboring hospitals, as described before. All activities of KOMD were led by midwives who were not authorized to perform obstetric operations such as cesarean section, or forceps or vacuum extraction delivery. However, they did perform minor operations such as suturing of episiotomy or perineal tears. Patients were very satisfied with KOMD activities, which was the reason to organize the second OMD within the Public Health Center in Zabok in 1967.

The OMD in Zabok was transformed to inpatient maternity hospital (IMH) in 1983. It took 16 years to employ the first anesthesiologist, Dr. Vladimir Sokolić, and Professor Miroslav Kopjar, MD, the founder of gynecologic surgery, who later became head of the Department of Obstetrics and Gynecology and director of the Zabok General Hospital. From its founding, he was president of the Croatian Society for Gynecologic Endoscopy of the Croatian Medical Association⁶.

All OMDs in the Krapina-Zagorje County were closed by the mid-1970s due to establishment of the Department of Obstetrics and Gynecology at the currently Zabok General Hospital and Veterans Hospital in 1974.



Fig. 3. Current view of the former maternity hospital in Klanjec.

Conclusion

In the second half of the 20th century, the existence of OMDs in the Krapina-Zagorje County had great public health role because they increased the quality of perinatal care compared to home births that were prevalent in more than 80% of deliveries in the 1950s. Development of the society enabled organization of general hospitals, which had departments of obstetrics and gynecology with maternity ward as one of the four obligatory medical departments. This was a huge step forward in reducing maternal and perinatal mortality in the regions where most of deliveries took place in hospitals. The results of our research contribute greatly to the study of historical development of maternity hospitals in the Republic of Croatia and Krapina-Zagorje County⁵⁻⁷.

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Sažetak

NOVE SPOZNAJE O RAZVOJU RODILIŠTA U REPUBLICI HRVATSKOJ NAKON DRUGOG SVJETSKOG RATA: IZVANBOLNIČKO RODILIŠTE U KLANJCU, HRVATSKO ZAGORJE, HRVATSKA

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Na području današnje Krapinsko-zagorske županije nakon Drugog svjetskog rata djelovala su tri izvanbolnička rodilišta, ono u Krapini, Klanjcu i Pregradi, čime je učinjen značajan iskorak u unapređenju javnozdravstvenih uvjeta. Prvo veliko izvanbolničko rodilište bilo je ono smješteno u Domu javnog zdravlja Klanjec. Paralelno s osnivanjem izvanbolničkog rodilišta u Zaboku zatvaraju se sva druga izvanbolnička rodilišta na području današnje Krapinsko-zagorske županije. Cilj našeg istraživanja bio je predstaviti djelovanje izvanbolničkog rodilišta u Klanjcu i prikazati njegov utjecaj na perinatalno zdravlje. Podaci o aktivnostima rodilišta dobiveni su iz knjige porođaja rodilišta u Klanjcu. Veći opstetrički zahvati, uključujući porođaj carskim rezom, nisu rađeni u rodilištu. Slijedom spomenutog su organizirani brojni transporti trudnica i porodilja u druga rodilišta. Najčešći su bili transporti uzrokovani produljenim porođajem. Zaključno, organizacija izvanbolničkih rodilišta na području današnje Krapinsko-zagorske županije značajno je unaprijedila perinatalnu skrb od pedesetih godina prošloga stoljeća. Slijedilo je postupno gašenje izvanbolničkih rodilišta koja nisu mogla zadovoljiti novopostavljene prostorne, materijalne i kadrovske zahtjeve te osnivanje rodilišta u općim i sveučilišnim bolnicama. Trend smanjenja perinatalne i majčinske smrtnosti u Zagorju, koji je započeo osnivanjem stacionarnog rodilišta u bolnici Zabok, traje i danas.

Ključne riječi: *Izvanbolničko rodilište; Povijest; Hrvatska*