

# IMPORTANCE OF QUALITY OF MATERNAL AND NEWBORN CARE IN CHILDBIRTH: FINDINGS OVER TIME OF THE IMAGINE EURO STUDY ON 40 WHO STANDARD-BASED QUALITY MEASURES DURING THE COVID-19 PANDEMIC IN LATVIA

Anna Regīna Knoka<sup>1,#</sup>, Elizabete Pumpure<sup>2, 3</sup>, Asnate Matroze<sup>1</sup>, Dārta Jakovicka<sup>1</sup>, Ilaria Mariani<sup>4</sup>, Agnija Vaska<sup>1</sup>, Benedetta Covi<sup>4</sup>, Emanuelle Pessa Valente<sup>4</sup>, Gita Jansone-Šantare<sup>2,3</sup>, Katrīna Paula Vilcāne<sup>5</sup>, Dace Rezeberga<sup>1,3,6</sup>, and Marzia Lazzerini<sup>4</sup>

<sup>1</sup> Faculty of Medicine, Rīga Stradiņš University, 16 Dzirciema Str., Rīga, LV-1007, LATVIA

<sup>2</sup> Department of Obstetrics and Gynecology, Rīga Stradiņš University, 45 Miera Str., Rīga, LV-1013, LATVIA

<sup>3</sup> Rīga Maternity Hospital, 45 Miera Str., Rīga, LV-1013, LATVIA

<sup>4</sup> WHO Collaborating Centre for Maternal and Child Health, Institute for Maternal and Child Health IRCCS Burlo Garofolo, Trieste, Via dell'Istria 65/1, 34137, ITALY

<sup>5</sup> Faculty of Public Health and Social Welfare, Rīga Stradiņš University, 16 Dzirciema Str., Rīga, LV-1007, LATVIA

<sup>6</sup> Rīga East University Hospital, 2 Hipokrāta Str., Rīga, LV-1038, LATVIA

# Corresponding author, annareginak@gmail.com

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*The objectives of the study were to investigate the quality of maternal and newborn care (QMNC) from the view of mothers who gave birth in a healthcare facility during the COVID-19 pandemic in Latvia. An online questionnaire survey was conducted in Latvia from 1 March 2020 to 28 October 2021, which was based on 40 World Health Organisation (WHO) Standard-based Quality measures. In addition, descriptive and multivariate quantile regression analyses were performed to compare the years 2020 and 2021. A total of 2079 women participated in the study, of whom 833 gave birth in 2020 — of them, 648 had a vaginal delivery, and 185 had a cesarean section, and 1205 women gave birth in 2021, 979 with a vaginal delivery, and 226 with a cesarean section. A lower QMNC during the COVID-19 pandemic was reported by 29.8% and 24.5% of respondents in 2020 and 2021. The total QMNC Index was notably higher in 2021 compared to 2020. This study showed essential gaps in the QMNC in Latvia perceived by mothers, while observing a slight increase in quality in 2021. Therefore, strategies to improve mothers' and newborns' health care should be introduced as soon as possible.*

**Keywords:** *childbirth experience, perinatal care, healthcare facilities, Europe, COVID-19.*

## INTRODUCTION

In January 2020, the WHO declared that the COVID-19 outbreak was an international concern, but it was announced a pandemic on 11 March 2020 (WHO, 2020). Soon after,

Latvia announced a country-wide State of Emergency (Cabinet of Ministers of Latvia, 2020). This COVID-19 pandemic impacted the health system enormously not only in Latvia, but worldwide. Personal protective equipment (PPE) was made necessary in all patient care, people keep-

ing distance between one another was made obligatory and regular COVID-19 testing was introduced (WHO, 2020).

The pandemic caused a lot of mistrust and negative experiences connected to healthcare. In regard to pregnant women and their healthcare, a mistrust in medical staff was observed, since prenatal visits were cancelled or rescheduled, health care specialists reported lacking knowledge about COVID-19, the frequency of maternal mental health problems was higher than before the pandemic, and partners were not allowed to accompany the pregnant women when giving birth (Wu *et al.*, 2020; Kotral *et al.*, 2021; McKinlay, 2022). Even before the COVID-19 pandemic, there were reports in other countries of inconsiderate behaviours during childbirth, such as no pain relief, no emotional support, and the woman not being included in decision-making (Gaucher *et al.*, 2021).

In 2016, the World Health Organisation published Standards for Improving Quality of Maternal and Newborn Care in Health Facilities in the hope of reducing maternal and neonatal mortality. The framework contained eight domains of quality of care that the health systems should assess, improve, and monitor. WHO worked to execute their vision in six strategic areas: clinical guidelines, standards of care, effective interventions, measures of quality of care, relevant research, and capacity-building. Standards of care and measures of quality were the priority of their work. Standards clearly defined what is needed to achieve quality of care before, during and after childbirth. During this, eight standards were formulated, one for each of the eight domains of the quality of care framework (WHO, 2016). IMAGINE EURO was a multi-country study focused on mothers' perspectives on quality of care during their childbirth experience in Latvia during the COVID-19 pandemic.

## MATERIALS AND METHODS

This cross-sectional study was conducted in accordance with the Strengthening the Reporting of Observational Studies (STROBE) in Epidemiology guidelines (Von Elm *et al.*, 2007). The study protocol was registered in ClinicalTrials (ref. NCT04847336).

Women who gave birth in Latvia from 1 March 2020 until 28 October 2021 and were 18 years of age or older were invited to participate in an online survey. Women who were excluded from the study were: younger than 18 years of age, gave birth outside the hospital, and gave birth before 1 March 2020. The online survey was available in Latvian and more than 20 other languages. The survey was promoted through a dissemination plan mainly focused on social media (Facebook, Instagram influencer accounts, parenting groups, and forums). Also, non-governmental organisations, universities, hospitals, and other institutions were asked to promote it through their social media accounts, websites, and newsletters.

Data were collected from 13 June 2021 until 28 October 2021 using a structured validated online questionnaire

(Lazzerini *et al.*, 2022), based on the WHO Standards of Care (WHO, 2016), and recorded using REDCap 8.5.21 - © 2021 Vanderbilt University via a centralised platform.

The questionnaire included five sociodemographic questions and 40 key Quality Measures, each representing one single WHO Standard-based Quality Measure, and equally distributed across four domains: provision of care (10 questions), the experience of care (10 questions), availability of human and physical resources (10 questions), and essential organisational changes related to the COVID-19 pandemic (10 questions). The 40 key Quality Measures of the questionnaire contributed to a composite quality of maternal and newborn care (QMNC) Index (scoring from 0 to 100), developed as a complementary synthetic measure of QMNC, with higher scores indicating higher adherence to WHO Standards.

The process of questionnaire development, validation, and previous use has been reported elsewhere (Lazzerini *et al.*, 2020; 2020b; Lazzerini *et al.*, 2022a; 2022b; Zaigham *et al.*, 2022). The questionnaire was developed in English, translated into Latvian, and back-translated according to the Professional Society for Health Economics and Outcomes Research (ISPOR) Task Force for Translation and Cultural Adaptation Principles of Good Practice (Wild *et al.*, 2005).

Questionnaire duplicates and cases missing 20% or more answers on 45 key variables (including the 40 key Quality Measures and five key sociodemographic variables (i.e., date of birth, age, education, parity, whether the woman gave birth in the same country where she was born) were excluded.

Descriptive statistics of sociodemographic characteristics (age range, educational level, women born in Latvia, parity, birth mode and other characteristics) and Quality Measures were reported as absolute frequency and percentage, comparison by year of childbirth (i.e. 2020 vs 2021), and by subgrouping the results by the experience of labour (i.e. women who underwent labour vs those with pre-labour C-section). These two groups differed only by a few Quality Measures and were separated into two groups. The first group included mothers with vaginal birth who experienced labour; the second one that included women with emergency C-sections who were categorised based on their report of having undergone labour (experience of regular uterine contractions), regarding which the NICE definition of labour was provided to them in the questionnaire (NICE, 2014).

Differences in the sociodemographic characteristics between the groups were tested with Chi-square or Fisher's exact test. In addition, differences in the Quality Measures by year in both subgroups were tested with adjusted odds ratios (OR), i.e., adjusting for all sociodemographic variables, type of professionals directly assisting the birth, newborn admission in neonatal intensive or special care baby units, and multiple births.

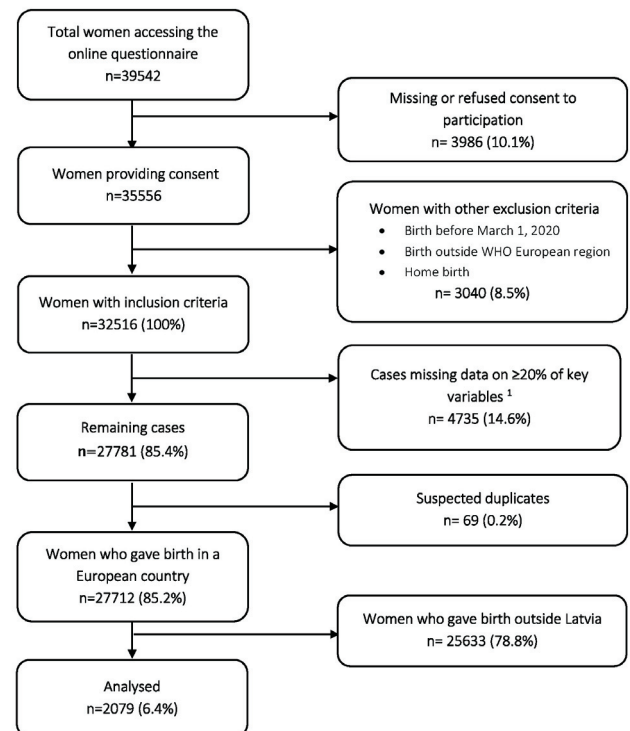
QMNC Indexes were calculated based on the predefined criteria previously described (Lazzerini *et al.*, 2022) for all women providing an answer to all the 40 key Quality Measures. Since not normally distributed, the QMNC Indexes were presented as median and interquartile ranges (IQRs) and plotted by year of childbirth (kernel density). First, differences by year of childbirth were tested with a Wilcoxon–Mann Whitney test and, secondly, to account for potential confounders, multivariable quantile regression models with robust standard errors for the 0.25<sup>th</sup>, 0.50<sup>th</sup>, and 0.75<sup>th</sup> quartiles were performed with the QMNC Index. This index was used as the dependent variable, and all sociodemographic variables, mode of labour, type of professional assisting the woman during labour, newborn admission in neonatal intensive or special care baby units, and multiple birth as independent variables, with collapsing age and educational level categories with low frequencies. The categories with the highest frequency were used as references. When the adjustments were made, the quantile regression showed an elevated QMNC index in 2021 in comparison to 2020. A higher QMNC index that was statistically significant at centiles was observed in the following groups: women with multiple births, women who had an obstetric/gynaecology doctor in the team assisting the birth as well as women born outside of Latvia. Additionally, there were groups that reported a lower QMNC index at one or more centiles: women who had an instrumental vaginal birth or a cesarean section, women in the age range of 18–24, women with a lower educational level, and women who had their newborn admitted to the NICU.

A two-tailed  $p$ -value  $< 0.05$  was considered statistically significant. Statistical analyses were performed using Stata/SE version 14.0 (Stata Corporation, College Station, TX, USA) and R version 4.1.1.

## RESULTS

IMAgINE EURO is a multicountry study project conducted in more than ten countries, including Lithuania, Italy, Sweden, Latvia, and others. From all participating countries, 39,542 women accessed the online questionnaire, of whom 35,556 (89.9%) agreed to participate. By 28 October 2021, the Latvian questionnaire was accessed by 2914 women, and 2750 (94.2%) agreed to participate. After eliminating women with exclusion criteria, 2079 reports were analysed (Fig. 1). As a result, 833 participating women gave birth in 2020, accounting for 4.8% of the total 17,344 births in Latvia 2020, while 1205 women gave birth in 2021, accounting for about 7.0 % of the total 17,206 births per that year (Health Statistic Database of Latvia, 2021).

The QMNC Indexes (Fig. 2) differed by subdomains ( $p < 0.001$ ) with a median Index for reorganisation for provision of care 85.0 (IQR 75.0, 90.0); experience of care 85.0 (IQR 70.0, 95.0); availability of physical and human resources 70.0 (IQR 55.0, 80.0); and reorganisational changes due to COVID-19 of 90.0 points (IQR 80.0, 100.0). The total QMNC Index and the QMNC Index in each of the four sub-



<sup>1</sup> We used 45 key variables (40 key Quality Measures and five key sociodemographic questions).

Fig. 1. Flow diagram of the study population and process of elimination.

domains were significantly higher in 2021 compared to 2020 ( $p < 0.001$ ).

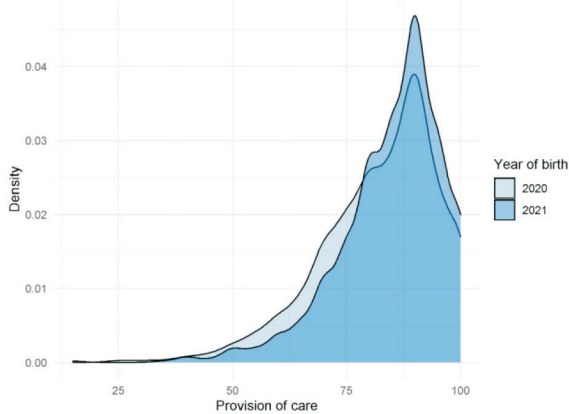
Tables 1–4 present findings on each of 40 key Quality Measures in subgroups of women who underwent labour (Panel a) and those with pre-labour C-section (Panel b) in the four domains of QMNC and results between 2020 and 2021 are compared.

Provision of care (Table 1): Of women who underwent labour, 35.3% were not given pain relief during labour (no significant difference between 2020 and 2021), and 3.2% reported that they were not allowed to stay with the baby as wished (no significant difference between 2020 and 2021). Regarding women with pre-labour C-section, 28.8% reported not having immediate attention when needed (no significant difference between 2020 and 2021), and 6.8% did not receive pain relief after C-section with no significant difference between both years.

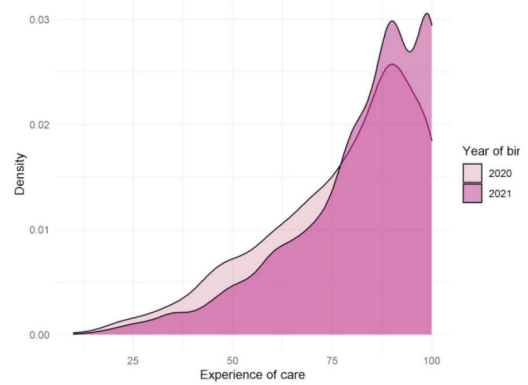
Experience of care (Table 2): Regarding women who underwent labour, 19.6% reported not having freedom of movement during labour, 43.5% of women were not involved in choices, and 30.9% had no emotional support (with a significant difference between 2020 and 2021: 36.2% vs 26.6%). 17.8% of women who did not undergo labour experienced abuse (physical/verbal/emotional) with no significant difference between 2020 and 2021 — 42.5% were not involved in choices, and 33.3% had no emotional support.

Availability of physical and human resources (Table 3): Out of women who underwent labour, 44.7% reported inadequate partner visiting hours (significant difference between

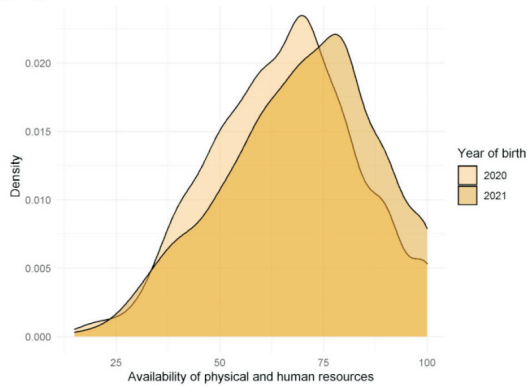
### Panel A. Subdomain of provision of care



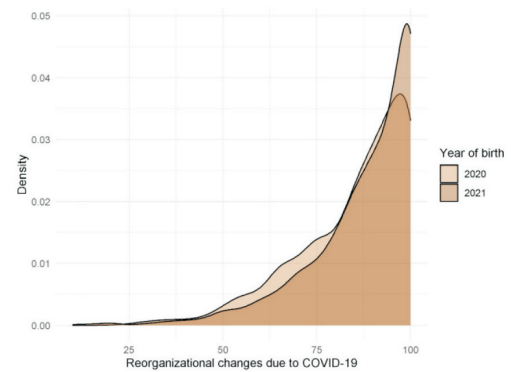
### Panel B. Subdomain of experience of care



### Panel C. Subdomain of availability of physical and human resources



### Panel D. Subdomain of reorganisational changes due to COVID-19



### Panel E. Total QMNC index

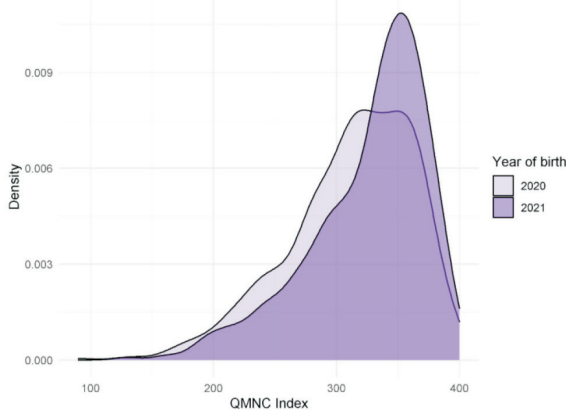


Fig. 2. QMNC index by year of labour within each of the subdomains: **Panel A** – Subdomain of provision of care. **Panel B** – Subdomain of experience of care. **Panel C** – Subdomain of availability of physical and human resources. **Panel D** – Subdomain of reorganisational changes due to COVID-19. **Panel E** – Total QMNC index. QMNC, quality of maternal and newborn care

2020 and 2021: 49.1% vs 41.4%), and 5.0% highlighted inadequate HCP (health care professional) professionalism. 6.8% of women who had a C-section noted inadequate room comfort and equipment, similarly to women who underwent labour, 46.6% reported inadequate partner visiting hours, but with no significant difference between 2020 and 2021.

Reorganisational changes due to COVID-19 (Table 4): 22.5% of women who underwent labour and 22.4% of women who had a C-section reported difficulty attending routine antenatal visits with no significant difference between 2020 and 2021 in both groups. Regarding HCP not

always using PPEs, significant changes were seen — women who underwent labour (22.7% in 2020 vs 14.4% in 2021) and women who had a C-section (31.1% vs 15.2%).

## DISCUSSION

The WHO intrapartum care model defines that the environment during the birthing experience should be calm, the partner of choice should be included, communication and decision making should be woman-centered, and choice of position and pain relief needs to be allowed. All communication should be peaceful, inclusive, and respectful (Oladapo *et al.*, 2018). Furthermore, by providing these standards of care, the woman's experience should be positive and increase the trust in the medical staff included in the process.

Almost one-fifth (17.0–17.8%) of all women participating in our study reported physical, verbal, or emotional abuse during labour. These results aligned with a recent Latvian article published, which contained interviews with three



Table 1. Results of provision of care in 2020 and 2021 with indicators based on WHO standards divided into groups of women who underwent labour and who did not undergo labour

Women who underwent labour n = 1860					Women who did not undergo labour n = 219				
Indicators	Overall n (%)	Year of birth		p-value	Indicators	Overall n (%)	Year of birth		p-value
		2020 n (%)	2021 n (%)				2020 n (%)	2021 n (%)	
n	1860	743	1080		n	219	90	125	
1. No pain relief during labour	656 (35.3)	267 (35.9)	369 (34.2)	0.738	1. Mode of birth				
2. Mode of birth					1a. Elective CS	83 (37.9)	38 (42.2)	44 (35.2)	0.366
2a. IVB	149 (8.0)	55 (7.4)	93 (8.6)	0.353	1b. ECS before labour	136 (62.1)	52 (57.8)	81 (64.8)	0.366
2b. ECS during labour	199 (10.7)	95 (12.8)	101 (9.4)	0.020	2. No pain relief after CS	15 (6.8)	7 (7.8)	8 (6.4)	0.905
3a. Episiotomy (in SVB)	318/1512 (21.0)	137/593 (23.1)	172/886 (19.4)	0.100	3. No skin to skin	69 (31.5)	35 (38.9)	34 (27.2)	0.076
3b. Fundal pressure (in IVB)	99/149 (66.4)	34/55 (61.8)	64/93 (68.8)	0.490	4. No early breastfeeding	44 (20.1)	24 (26.7)	19 (15.2)	0.027
3c. No pain relief after CS	18/199 (9.0)	11/95 (11.6)	6/101 (5.9)	0.251	5. Inadequate breastfeeding support	83 (37.9)	32 (35.6)	51 (40.8)	0.524
4. No skin to skin	146 (7.8)	83 (11.2)	61 (5.6)	< 0.001	6. No rooming-in	54 (24.7)	22 (24.4)	29 (23.2)	0.961
5. No early breastfeeding	96 (5.2)	47 (6.3)	48 (4.4)	0.140	7. Not allowed to stay with the baby as wished	12 (5.5)	2 (2.2)	9 (7.2)	0.187
6. Inadequate breastfeeding support	609 (32.7)	289 (38.9)	310 (28.7)	< 0.001	8. No exclusive breastfeeding at discharge	89 (40.6)	36 (40.0)	51 (40.8)	1.000
7. No rooming-in	183 (9.8)	76 (10.2)	104 (9.6)	0.733	9. No immediate attention when needed	63 (28.8)	26 (28.9)	36 (28.8)	1.000
8. Not allowed to stay with the baby as wished	60 (3.2)	24 (3.2)	34 (3.1)	1.000	10. No timely care by HCP at facility arrival	28 (12.8)	10 (11.1)	17 (13.6)	0.738
9. No exclusive breastfeeding at discharge	535 (28.8)	234 (31.5)	288 (26.7)	0.029					
10. No immediate attention when needed	456 (24.5)	203 (27.3)	238 (22.0)	0.011					

All the indicators in the domain of provision of care are directly based on WHO standards.

Indicators identified with letters (e.g., 3a, 3b) were tailored to take into account different modes of birth (i.e. spontaneous vaginal, instrumental vaginal, and cesarean section). These were calculated on subsamples (e.g., 3a was calculated on spontaneous vaginal births; 3b was calculated on instrumental vaginal births). CS, caesarean section; ECS, emergency caesarean section; HCP, health care provider; IVB, instrumental vaginal birth; SVB, spontaneous vaginal birth

women with negative birthing experiences, where different types and levels of abusive behaviour from the medical staff were encountered (Satori, 2022). In Latvia, 24.8% of women who underwent labour reported not being treated with dignity, which was similar to results obtained in France (23.1%) while results in Croatia (38.9%) were even higher. Regarding women who had cesarean section, in Latvia 17.8% reported abuses (physical/verbal/emotional), while there were fewer reports in Luxembourg (8.5%) and Norway (7.8%) (Lazzerini *et al.*, 2022). The obtained results show different results in European countries and between women who underwent labour and women who had cesarean section.

Regarding pain relief during labour, the previously mentioned interview brought attention to Latvia's Ministry of Health and positively affected the healthcare system, since improvements were initiated to minimise negative experiences during childbirth and overall maternal health care. Starting from 1 August 2022, epidural anaesthesia is free of

charge for all women who request it (The Ministry of Health of Latvia, 2022). Previously, it was provided cost-free only when medically indicated, otherwise, it was an out-of-pocket charge. There are also plans in the future to provide government-financed birth control for people in social risk groups and to decrease working hours for medical personnel (Ravaldi *et al.*, 2018), which could improve communication and decrease the verbal abuse experienced by mothers during labour, since overwork can influence work performance (National Institute for Occupational Safety and Health, 2013).

The results obtained in the study showed a lack of partners' presence during labour due to COVID-19 restrictions. This impacts the birthing experience, since it limits the emotional support for woman in labour. During the COVID-19 pandemic, Latvia participated in an International Sexual Health Reproductive Health (I-SHARE) project and a part of it included research on how women, their partners and health care professionals felt during and after childbirth, es-

Table 2. Results of experience of care in 2020 and 2021 with indicators based on WHO standards divided into groups of women who underwent labour and who did not undergo labour

Women who underwent labour n = 1860					Women who did not undergo labour n = 219				
Indicators	Overall n (%)	Year of birth		p-value	Indicators	Overall n (%)	Year of birth		p-value
		2020 n (%)	2021 n (%)				2020 n (%)	2021 n (%)	
n	1860	743	1080		n	219	90	125	
1. No freedom of movement during labour	365 (19.6)	150 (20.2)	207 (19.2)	0.862	1. No consent is requested for vaginal examination	73 (33.3)	32 (35.6)	39 (31.2)	0.784
2a. No choice of birth position (in SVB)	713/1512 (47.2)	303/593 (51.1)	391/886 (44.1)	0.010	2. No information on newborn	85 (38.8)	30 (33.3)	54 (43.2)	0.186
2b. No consent requested (for IVB)	89/149 (59.7)	34/55 (61.8)	54/93 (58.1)	0.782	3. No clear/effective communication from HCP	63 (28.8)	25 (27.8)	37 (29.6)	0.890
2c. No information on newborns (in ECS)	82/199 (41.2)	41/95 (43.2)	39/101 (38.6)	0.616	4. No involvement in choices	93 (42.5)	39 (43.3)	52 (41.6)	0.909
3. No clear/effective communication from HCP	559 (30.1)	255 (34.3)	286 (26.5)	< 0.001	5. Companionship not allowed	102 (46.6)	47 (52.2)	53 (42.4)	0.198
4. No involvement in choices	810 (43.5)	352 (47.4)	439 (40.6)	0.005	6. Not treated with dignity	53 (24.2)	23 (25.6)	29 (23.2)	0.813
5. Companionship not allowed	665 (35.8)	320 (43.1)	332 (30.7)	< 0.001	7. No emotional support	73 (33.3)	35 (38.9)	37 (29.6)	0.202
6. Not treated with dignity	462 (24.8)	225 (30.3)	219 (20.3)	< 0.001	8. No privacy	53 (24.2)	23 (25.6)	29 (23.2)	0.813
7. No emotional support	574 (30.9)	269 (36.2)	287 (26.6)	< 0.001	9. Abuses (physical / verbal/emotional)	39 (17.8)	17 (18.9)	21 (16.8)	0.830
8. No privacy	528 (28.4)	220 (29.6)	294 (27.2)	0.289	10. Informal payment	16 (7.3)	3 (3.3)	13 (10.4)	0.092
9. Abuses (physical /verbal /emotional)	317 (17.0)	146 (19.7)	164 (15.2)	0.015					
10. Informal payment	77 (4.1)	35 (4.7)	40 (3.7)	0.345					

All the indicators in the domain of experience of care are directly based on WHO standards.

Indicators identified with letters (e.g., 2a, 2b) were tailored to take into account different modes of birth (i.e. spontaneous vaginal, instrumental vaginal, and cesarean section). These were calculated on subsamples (e.g., 2a was calculated on spontaneous vaginal births; 2b was calculated on instrumental vaginal births). ECS, emergency caesarean section; HCP, health care provider; IVB, instrumental vaginal birth; SVB, spontaneous vaginal birth

pecially focusing on the COVID-19 restrictions. The results obtained during group discussions showed that the partners presence during labour and delivery was an important factor when deciding about the place where to give birth (Lazdane *et al.*, 2021). This shows that partners presence during childbirth is important for the woman giving birth. In 2020, when the COVID-19 pandemic started in Latvia, partners presence during labour was not allowed, but in May 2021 they started to allow one partner to be present during labour, for example, Pauls Stradiņš Clinical University Hospital allowed one partner to participate starting 21 May 2021 (LSM, 2021).

During the COVID-19 pandemic in Latvia, all medical staff was required to wear PPEs during all medical procedures and as a result emotional support and humane contact were less likely to happen. A report in Sweden highlighted the issue of health care professionals wearing masks, which caused a decrease in emotional and physical support for women (Zaigham, 2022). As previously mentioned, in 2021, some restrictions were lifted, and partners were allowed to participate in labour with a negative COVID-19 test, which was associated with an increase in the QMNC index in 2021.

The main strengths of this study are high numbers of participants — 4.8% of all births in 2020 with an increase up to 7.0% in 2021 in Latvia. In addition, the use of a standardised validated questionnaire allowed to cover quality measures based on WHO Standards (Lazzerini, 2022). Limitations of this study have been discussed already (Lazzerini, 2022a; 2022b; Zaigham, 2022). Additionally, in Latvia data from the survey was collected only during a time period in 2021, and therefore there is a chance that women who gave birth in 2020 might have forgotten details about their experience.

The results obtained show various possibilities for improvement in health care of mothers and newborns. Numerous changes should be made, such as training of personnel about woman-centered communication and care, bearing in mind the necessity of partners' presence during labour. Regarding pain relief during labour, changes were already initiated, but there are more possibilities to improve knowledge and understanding regarding this topic. Enough healthcare professionals should be involved in the labour process as well as before and after birth. Upgrades should be made in the support during the postpartum period. Focusing on the published World Health Organisation's Stan-

Table 3. Results on availability of physical and human resources in 2020 and 2021 for women who underwent labour and who did not undergo labour

Women who underwent labour n = 1860					Women who did not undergo labour n = 219				
Indicators	Overall n (%)	Year of birth		p-value	Indicators	Overall n (%)	Year of birth		p-value
		2020 n (%)	2021 n (%)				2020 n (%)	2021 n (%)	
n	1860	743	1080		n	219	90	125	
1. No timely care by HCPs at facility arrival	216 (11.6)	81 (10.9)	123 (11.4)	0.804	1. No information on maternal danger signs	147 (67.1)	61 (67.8)	85 (68.0)	1.000
2. No information on maternal danger signs	1170 (62.9)	523 (70.4)	623 (57.7)	< 0.001	2. No information on newborn danger signs	164 (74.9)	70 (77.8)	92 (73.6)	0.589
3. No information on newborn danger signs	1380 (74.2)	564 (75.9)	787 (72.9)	0.161	3. Inadequate room comfort and equipment	15 (6.8)	7 (7.8)	8 (6.4)	0.905
4. Inadequate room comfort and equipment	91 (4.9)	35 (4.7)	55 (5.1)	0.795	4. Inadequate number of women per room	6 (2.7)	2 (2.2)	4 (3.2)	0.992
5. Inadequate number of women per room	79 (4.2)	28 (3.8)	49 (4.5)	0.494	5. Inadequate room cleaning	4 (1.8)	2 (2.2)	2 (1.6)	1.000
6. Inadequate room cleaning	42 (2.3)	20 (2.7)	20 (1.9)	0.298	6. Inadequate bathroom	18 (8.2)	10 (11.1)	8 (6.4)	0.327
7. Inadequate bathroom	132 (7.1)	72 (9.7)	54 (5.0)	< 0.001	7. Inadequate partner visiting hours	102 (46.6)	46 (51.1)	54 (43.2)	0.313
8. Inadequate partner visiting hours	832 (44.7)	365 (49.1)	447 (41.4)	0.001	8. Inadequate HCP number	15 (6.8)	6 (6.7)	9 (7.2)	1.000
9. Inadequate HCP number	151 (8.1)	65 (8.7)	81 (7.5)	0.380	9. Inadequate HCP professionalism	14 (6.4)	5 (5.6)	9 (7.2)	0.840
10. Inadequate HCP professionalism	93 (5.0)	37 (5.0)	51 (4.7)	0.888	10. Inadequate wards reorganisation	72 (32.9)	32 (35.6)	40 (32.0)	0.690

All the indicators in the domain of resources are directly based on WHO standards. HCP, health care provider

Table 4. Results of reorganisational changes due to COVID-19 during 2020 and 2021 for women who underwent labour and who did not undergo labour

Women who underwent labour n = 1860					Women who did not undergo labour n = 219				
Indicators	Overall n (%)	Year of birth		p-value	Indicators	Overall n (%)	Year of birth		p-value
		2020 n (%)	2021 n (%)				2020 n (%)	2021 n (%)	
n	1860	743	1080		n	219	90	125	
1. Difficulties in attending routine antenatal visits	419 (22.5)	182 (24.5)	225 (20.8)	0.074	1. Difficulties in attending routine antenatal visits	49 (22.4)	22 (24.4)	26 (20.8)	0.640
2. Any barriers to accessing the facility	438 (23.5)	183 (24.6)	243 (22.5)	0.317	2. Any barriers to accessing the facility	58 (26.5)	22 (24.4)	34 (27.2)	0.767
3. Inadequate infographics	93 (5.0)	37 (5.0)	51 (4.7)	0.888	3. Inadequate infographics	14 (6.4)	5 (5.6)	9 (7.2)	0.840
4. Inadequate wards reorganisation	475 (25.5)	206 (27.7)	259 (24.0)	0.081	4. Inadequate wards reorganisation	72 (32.9)	32 (35.6)	40 (32.0)	0.690
5. Inadequate room reorganisation	472 (25.4)	207 (27.9)	257 (23.8)	0.057	5. Inadequate room reorganisation	50 (22.8)	23 (25.6)	27 (21.6)	0.607
6. Lacking one functioning accessible hand-washing station	248 (13.3)	99 (13.3)	141 (13.1)	0.923	6. Lacking one functioning accessible hand-washing station	24 (11.0)	12 (13.3)	12 (9.6)	0.523
7. HCP not always using PPEs	335 (18.0)	169 (22.7)	155 (14.4)	< 0.001	7. HCP not always using PPEs	47 (21.5)	28 (31.1)	19 (15.2)	0.009
8. Insufficient HCP number	314 (16.9)	138 (18.6)	165 (15.3)	0.073	8. Insufficient HCP number	37 (16.9)	11 (12.2)	26 (20.8)	0.144
9. Communication is inadequate to contain COVID-19-related stress	474 (25.5)	224 (30.1)	238 (22.0)	< 0.001	9. Communication is inadequate to contain COVID-19-related stress	57 (26.0)	31 (34.4)	25 (20.0)	0.026
10. Reduction in QMNC due to COVID-19	507 (27.3)	219 (29.5)	270 (25.0)	0.039	10. Reduction in QMNC due to COVID-19	57 (26.0)	27 (30.0)	30 (24.0)	0.408

dards for Improving Quality of Maternal and Newborn Care in Health Facilities, these improvements could be achieved.

## CONCLUSIONS

This is the first study in Latvia that provides an insight into the childbirth experience of Latvian women and indicates the need for improvements. Overall, data obtained in the study showed difficulties in the Quality measures being met in Latvia during the COVID-19 pandemic, but it also highlighted problems that had existed even before the pandemic. Luckily, changes have already been initiated in Latvia, which gives hope for more positive childbirth experiences in the future.

## ETHICS

The study was approved by the Rīga Stradiņš University Research Ethics Committee in Latvia (22-2/140/2021 16.03.2021) and by the Institutional Review Board of the coordinating centre: the IRCCS Burlo Garofolo Trieste (IRB-BURLO 05/2020 15.07.2020), as well as by ethical committees of other participating countries. Participation in the survey was entirely voluntary and anonymous. However, their right to reject participation in the survey, study methodology, and research objectives were described, and informed permission to participate in the study was requested to progress into the survey. The data was kept and analysed in Italy (coordination center). Encryption was used to safeguard data transit and storage (Lazzerini *et al.*, 2022).

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## MĀTES UN JAUNDZIMUŠĀ APRŪPES KVALITĀTES NOZĪMĪGUMS DZEMDĪBU LAIKĀ: IMAGINE EURO PROJEKTA IETVAROS IEGŪTIE REZULTĀTI PAR 40 PVO KVALITĀTES RĀDĪTĀJIEM COVID-19 PANDĒMIJAS LAIKĀ LATVIJĀ

Pētījuma mērķis bija noskaidrot mātes skatījumu uz viņas un jaundzimušā aprūpes kvalitāti Covid-19 pandēmijas laikā. Pētījumā tika izmantota tiešsaistes aptauja, kurā piedalījās tika aicinātas sievietes, kurām dzemdības notika stacionārā Covid-19 pandēmijas laikā. Tika aptaujātas sievietes, kurām dzemdības notikušas laika posmā no 2020. gada 1. marta līdz 2021. gada 1. oktobrim, un aptaujā tika iekļauti Pasaules Veselības Organizācijas (PVO) 40 Standarta kvalitātes rādītāji. Aprakstošas un daudzfaktoru kvantiļu regresijas analīzes tika izmantotas, lai salīdzinātu 2020. un 2021. gadu. 2079 sievietes piedalījās pētījumā. 833 no tām dzemdības notika 2020. gadā, 648 no tām bija vaginālas dzemdības, taču 185 tās bija ar ķeizargrieziena palīdzību. 2021. gadā dzemdības notika 1205 no pētījuma dalībniecēm, no kurām 979 bija vaginālas dzemdības un 226 tās bija ar ķeizargrieziena palīdzību. Zemāku kvalitātes indeksu Covid-19 pandēmijas laikā 2020. un 2021. gadā atzīmēja 29.8% un 24.5% no pētījuma dalībniecēm. Kopējais kvalitātes indekss 2021. gadā bija statistiski ticami augstāks nekā 2020. gadā. Šis pētījums parādīja nozīmīgus trūkumus mātes un jaundzimušā aprūpes kvalitātē, taču 2021.gadā tika novērots neliels kvalitātes uzlabojums. Pēc iespējas ātrāk būtu nepieciešams noteikt plānu un uzsākt mātes un jaundzimušā aprūpes kvalitātes uzlabošanu.