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Barriers to access adequate maternal care in Romania, Bulgaria, and Moldova: A cross-country comparison

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Abstract

Background: Eastern European health system indicators (e.g., number of health workers and care coverage) suggest well-resourced maternity care systems, but maternal health outcomes compare poorly with those in Western Europe. Often, poor maternal health outcomes are linked to inequities in accessing adequate maternal care. This study investigates access-related barriers (availability, appropriateness, affordability, approachability, and acceptability) to maternity care in Romania, Bulgaria, and Moldova.

Methods: This cross-country study (n = 7345) is based on an online survey where women who received maternity care and gave birth in 2015–2018 in Bulgaria (n = 4951), Romania (n = 2018), and Moldova (n = 376) provided information on their experiences with the care received. We used regression analysis to identify factors associated with accessing maternity care across the three countries.

Results: Results show high rates of cesarean births (CB) and a low number of antenatal and postnatal care visits. Informal payments and use of personal connections are common practices. Formal and informal out-of-pocket payments create a financial burden for women with health complications. Women who had health complications, those who gave birth by cesarean, and women who gave birth in a public facility and had fewer antenatal check-ups, were more likely to describe facing access-related barriers.

Conclusions: This study identifies several barriers to high-quality maternity care in Romania, Bulgaria and Moldova. More attention should be paid to the appropriateness of care provided to women with complicated pregnancies, to those who have CBs, to women who give birth in public facilities, and to those who receive fewer antenatal care visits.

KEYWORDS

access, Bulgaria, maternal care, Moldova, Romania

1 | INTRODUCTION

Although Europe is a minor contributor to the global maternal mortality burden, the problem is still more common in Eastern than in Western Europe. Maternal mortality rate (MMR) estimates in Europe in 2017 ranged from 2 per 100 000 live births in Italy, Poland, and Norway to 60 per 100 000 live births in Kyrgyzstan.[1] Despite macro-indicators that suggest well-designed maternity care systems,[2] Romania and Moldova have a much higher estimated MMR (19 deaths per 100 000 live births in 2017) than Bulgaria (10 deaths per 100 000 live births in 2017).[1] Receiving adequate maternal care is key to reducing maternal mortality. In this study, as in our previous study in Latvia, "maternity care" refers to "health services provided by a physician (e.g., obstetrician or GP) or midwife in an outpatient practice, hospital or maternity institution, to a woman during her pregnancy (antenatal care), childbirth and up to 42 days after childbirth (postnatal care)."[3] Furthermore, by adequate maternity care, we mean the extent to which services are safe, effective, timely, efficient, equitable and person-centered.[3] However, most macro-indicators at the system level only capture capacity, funding, and utilization of care and not the actual allocation of financial and human resources, appropriateness of care, or access to it. These latter aspects of maternity care are problematic in Eastern Europe.[2,4,5] The UK Care Quality Commission (CQC) maternity care survey and the state-based surveys in Victoria, Australia, focus on women's experiences with antenatal, birth, and postnatal care.[6,7] However, no such national survey exists in the Eastern European countries of Bulgaria, Moldova, or Romania.

In Bulgaria and Romania, unmet needs for medical care because of financial reasons suggest access-related problems across all income quintiles.[8] Patients in Bulgaria face exceptionally high out-of-pocket costs, amounting to 48% of total health expenditure in 2015.[8] In Romania, out-of-pocket payments are also widespread.[8,9] In addition, Romania and Bulgaria have some of the lowest numbers of nurses per capita in the EU, while Romania also has very few physicians.[4,8] Travel distance, outdated infrastructure, gaps in population coverage, challenging access to pharmaceuticals, and fragmented availability of medical staff in Bulgaria and Romania result in unequal access to services, especially for low-income groups.[4,8] These shortcomings are associated with poor health outcomes, especially among pregnant women.[8] Moldova's health system is facing similar challenges. Insufficient medical personnel in most rural areas as a result of a brain drain (care providers leaving low- and middle-income countries for more lucrative employment in higher resource nations) and insufficient ultrasound equipment reduce access to high-quality maternal care.[10,11] Informal payments also remain a widespread problem.[10,12] According to a previous study, 61.6% of all patients in Moldova voluntarily make informal payments, and 23.2% are asked to pay informally by medical staff.

In our study, we examined barriers to access to adequate maternity care in Romania, Bulgaria, and Moldova. These countries were chosen for their broadly similar backgrounds (as Romania and Bulgaria are part of the European Union and Romania and Moldova have strong cultural similarities), level of economic development, deficiencies in funding and organization in maternity care delivery, yet differing MMR estimates. Following the framework of Levesque et al., we used the following: availability, appropriateness, affordability, approachability, and acceptability of maternal care.[13] Availability reflects the geographic location, distribution, number of health care service points, open hours, range of services, and providers that the patients can choose from. Appropriateness refers to the technical and professional adequacy of provider skills and knowledge, as well as the facilities and equipment used. Affordability refers to formal and informal patient payments and the use of personal connections to receive care. Approachability reflects the ways providers approach women in terms of their attitude and communication styles. Acceptability refers to cultural, traditional, and informational aspects that determine whether institutionalized care is acceptable to women.[2,13] The purpose of this study was to identify and compare barriers to accessing adequate maternity care in Romania, Bulgaria, and Moldova and to explore the association between access-related indicators and various demographic characteristics and health status.

2 | METHODS

We used data collected during a two-week period in March 2018 via an online survey among women in Romania, Bulgaria, and Moldova who were members of "mommy groups" on Facebook.

In order to find "mommy groups" on Facebook, keywords such as "mothers" (mame/ мама), "mommies" (mămici/майки), and "babies" (bebeluşi/бебета) were used. For an advanced search, these keywords were used both in English and in Romanian/Bulgarian. Furthermore, these terms were searched by country, city, and region to achieve a better geographical representation and to cover as many regions of the three countries as possible.

Eligible respondents were those who had given birth in these three countries in the preceding 4 years who had received maternity care. A recall period of 4 years was considered to be appropriate because the literature suggests that women can well recall their childbirth experiences even

5 years after the birth.[14] Before enrolling in the survey, and again at the beginning of the survey, we emphasized to participants that they were being asked to provide information on their experience during their last pregnancy, birth, and postnatal period. The invitation to the survey, along with a link to the online questionnaire, was shared on Facebook "mommy groups" by Romanian, Bulgarian, and Moldovan data collectors who had asked the permission of the groups in their country to become group members. The respondents were enrolled through self-administration. Given the timeline of messages in social media, one reminder to participate was sent to each Facebook group after 1 week of the survey being active. At the end of the second week, the survey was automatically deactivated. We did not repeatedly send reminders because this would have overburdened the "mommy" groups.

This type of online data collection has been recognized as a time- and cost-efficient way to facilitate the inclusion of a large number of potential participants. It also provides the participants with a high level of anonymity, as they take part in the survey without a personal invitation.[15,16]

The online questionnaire consisted of closed-ended questions on the general demographic characteristics of the respondents, their health conditions, and their experiences with maternity care during their last childbirth related to the five groups of access indicators used in the Levesque et al. framework (see Appendix).[13] The questionnaire was developed in English and validated in a previous study in Latvia.[3] To enable the participants to fully understand the questions and to decrease information bias,[17] the questionnaire was translated into Bulgarian and Romanian by the data collectors, who were bilingual (English and Bulgarian/Romanian).

Survey question categories with only a limited number of observations were merged in order to create sufficient power to identify effect sizes in the analysis (see Appendix). Descriptive statistics were calculated for all dependent variables (access-related indicators) and independent explanatory variables (socio-demographic and health characteristics) for the three countries. Independent variables have no missing values, while for the dependent variables, missing values are reported in the results section. Binary logistic regression analysis was carried out for access to adequate maternity care to test which dependent variables are associated with the general sample characteristics.[16] Dependent variables are related to four out of five access-related indicators: availability, appropriateness, affordability, and approachability of care. Variables related to the fifth access-related indicator, acceptability, showed virtually no variation and were therefore excluded from the regression analysis. The explanatory variables included were: age, education, number of children, marital status, income, presence of health complications, and utilization of public or private sector, as well as time, place, and type of the last childbirth (see Appendix). In particular, the number of children was included to evaluate whether prior experience with maternity care influenced the women's answers.

3 | RESULTS

The results are based on 7345 responses by women who participated in Facebook "mommy groups" in Romania (n = 2018), Bulgaria (n = 4951), and Moldova (n = 376) who gave birth between 2014 and 2017. Responses from those who did not confirm agreement to participate in the study were excluded (60 responses from Bulgaria, 31 from Romania, and 3 from Moldova). Furthermore, responses that contained missing values in any of the 12 questions on general characteristics were excluded from the final sample. In total, these accounted for 155 cases (Romania n = 37, Bulgaria n = 109, Moldova n = 9), representing 1%–2% of responses per country.

3.1 | General characteristics of the sample, maternal health, and use of maternity care in Romania, Bulgaria, and Moldova

Table 1 presents the main characteristics of respondents in the three countries. Spearman's correlation coefficients suggest no strong correlation between these variables (correlation was between −0.4 and 0.4). Across the three countries, women were similarly distributed among the defined age groups, with the majority (40.8%–49.5%) being 25–29 years old. The participants varied in their education levels, but most (71.3%–97.3%) had acquired a higher level of education (college and higher). The majority (57.2%–65.4%) had one child, while very few (3.2%–8.5%) had three or more children. In Romania and Bulgaria, the majority of women (40.6% and 45.7%) had an income in the €501–€1000 category, while in Moldova the majority (43.4%) had an income in the range of €251–€500. Finally, 96.7–97.2% of women in the three countries lived together with a spouse or partner.

Table 1 also presents data on the characteristics of respondents' maternity care use and health status during the perinatal period. Most women in all three countries (77.2%–80.5%) had their last childbirth within the two previous years. For most (67.3%–83.8%), their last childbirth took place in a public institution. In Bulgaria, women more often gave birth in private institutions (32.1%) than in Romania (14.6%) or Moldova (16%). In the three countries, 26.6%–34.8% of women experienced health complications during their last perinatal period. CB was reported

TABLE 1 General characteristics of the sample, maternal health and the use of maternal care in Romania (N = 2018), Bulgaria (N = 4951), and Moldova (N = 376)

	Romania n (%)	Bulgaria n (%)	Moldova n (%)
General sample characteristics			
Age at last childbirth			
24 years or younger	440 (21.8)	854 (17.2)	71 (18.9)
25–29 years	908 (45.0)	2020 (40.8)	186 (49.5)
30–34 years	502 (24.9)	1427 (28.8)	100 (26.6)
35 years or older	168 (8.3)	650 (13.1)	19 (5.1)
Education level			
Lower than High school	47 (2.3)	25 (0.5)	9 (2.4)
High school	531 (26.3)	1067 (21.6)	5 (1.3)
Some college or Bachelor's degree	917 (45.4)	1734 (35.0)	206 (55.8)
Master's degree or higher	523 (25.9)	2125 (42.9)	156 (41.5)
Civil status (values 0–1)			
Living with spouse/ partner	1951 (96.7)	4811 (97.2)	364 (96.8)
Living alone	67 (3.3)	140 (2.8)	12 (3.2)
Total net monthly household income			
€00–€250	123 (6.1)	333 (6.7)	77 (20.5)
€251–€500	482 (23.9)	1271 (25.7)	163 (43.4)
€501–€1000	819 (40.6)	2265 (45.7)	82 (21.8)
€1001–€1500	397 (19.7)	595 (12.0)	42 (11.2)
More than €1500	197 (9.8)	487 (9.8)	12 (3.2)
Number of children			
1 child	1320 (65.4)	3180 (64.2)	215 (57.2)
2 children	633 (31.4)	1590 (32.1)	129 (34.3)
3 or more children	65 (3.2)	181 (3.7)	32 (8.5)
Characteristics of maternal care use and health status			
Time of last childbirth (values 1–5)			
<1 year ago	718 (35.6)	1477 (29.8)	122 (32.4)
1 year ago	387 (19.2)	1181 (23.9)	88 (23.4)
2years ago	470 (23.3)	1162 (23.5)	93 (24.7)
3 years ago	260 (12.9)	699 (14.1)	47 (12.5)
4 years ago	183 (9.1)	432 (8.7)	26 (6.9)
Health complications in maternal period			
No	1378 (68.3)	3636 (73.4)	245 (65.2)
Yes	640 (31.7)	1315 (26.6)	131 (34.8)
Place of last childbirth			
Public facility	1692 (83.8)	3332 (67.3)	315 (83.8)
Private facility or another	326 (16.2)	1619 (32.7)	61 (16.2)
Type of birth			
Vaginal childbirth	788 (39.0)	2329 (47.0)	301 (80.1)
Cesarean birth	1230 (61.0)	2622 (53.0)	75 (19.9)
Number of antenatal visits			
0	144 (7.1)	29 (0.6)	10 (2.7)
1–4	261 (12.9)	407 (8.2)	117 (31.1)
5–6	253 (12.5)	377 (7.6)	104 (27.7)
7–8	354 (17.5)	668 (13.5)	63 (16.8)
9–10	401 (19.9)	1055 (21.3)	31 (8.2)
11–12	179 (8.9)	736 (14.9)	14 (3.7)
>12	426 (21.1)	1679 (33.9)	37 (9.8)
Number of postnatal visits			
0	270 (13.4)	924 (18.7)	63 (16.8)
1	475 (23.5)	1996 (40.3)	123 (32.7)
2	383 (19.0)	1190 (24.0)	72 (19.1)
3	167 (8.3)	355 (7.2)	31 (8.2)
4	122 (6.0)	144 (2.9)	24 (6.4)
<4	601 (29.8)	342 (6.9)	63 (16.8)
Sector of maternal care reception			
Public & private	688 (34.1)	2043 (41.3)	70 (18.6)
Private	422 (20.9)	1230 (24.8)	36 (9.6)
Public	908 (45.0)	1678 (33.9)	270 (71.8)

at an extremely high rate in Romania (61%) and Bulgaria (53%), while in Moldova the rate was markedly lower (19.9%). The data also indicate variation in antenatal visits across the countries. In Moldova, 61.5% of women had fewer than seven antenatal visits, while in Romania this percentage was 32.5%, and in Bulgaria, 16.4%. Finally, 13.4%–18.7% of women in the three countries reported receiving no postnatal care.

3.2 | Indicators related to access to adequate maternity care in Romania, Bulgaria, and Moldova

With respect to availability, birthing people in Moldova experience more barriers than in Bulgaria and Romania.

TABLE 2 Availability, appropriateness, affordability, approachability, and acceptability of maternal care in Romania (N = 2018), Bulgaria (N = 4951), and Moldova (N = 376), descriptive results

	Romania *N* = 2018 n (%)	Bulgaria *N* = 4951 n (%)	Moldova *N* = 376 n (%)
Availability			
Experienced access barriers due to time, transport, distance (missing RO n = 1, BG n = 7, MD n = 0)	304 (15.1)	769 (15.6)	95 (25.3)
Experienced access barriers due to waiting lists, referrals or opening hours (missing RO n = 6, BG n = 7, MD n = 0)	474 (23.6)	969 (19.6)	195 (51.9)
Shortage of staff providing adequate maternal care (missing RO n = 7, BG n = 28, MD n = 0)	791 (39.3)	1646 (33.4)	215 (57.2)
Appropriateness			
Satisfied with maternal care provider skills (antenatal period) (missing RO n = 0, BG n = 7, MD n = 0)	1773 (87.9)	4277 (86.5)	280 (74.5)
Satisfied with maternal care provider skills (childbirth) (missing RO n = 1, BG n = 23, MD n = 0)	1744 (86.5)	4383 (88.9)	330 (87.7)
Satisfied with maternal care provider skills (postnatal period) (missing RO n = 6, BG n = 42, MD n = 1)	1503 (74.7)	2888 (58.8)	235 (62.7)
Satisfied with conditions and equipment at maternal care facilities (missing RO n = 10, BG n = 8, MD n = 0)	1370 (68.2)	2932 (59.3)	191 (50.8)
Affordability			
Paid out-of-pocket (missing RO n = 11, BG n = 23, MD n = 5)	1329 (66.2)	3875 (78.6)	279 (75.2)
Experienced financial burden (missing RO n = 151, BG n = 217, MD n = 7)	802 (43.0)	1680 (35.5)	82 (22.2)
Provided informal payment (missing RO n = 70, BG n = 114, MD n = 5)	1229 (63.1)	2202 (45.7)	297 (80.1)
Used personal connections (missing RO n = 2, BG n = 5, MD n = 0)	692 (34.3)	1898 (38.4)	240 (63.8)
Approachability			
Satisfied with provider attitude and communication (antenatal period) (missing RO n = 15, BG n = 41, MD n = 6)	1710 (85.4)	3728 (76.0)	251 (67.8)
Satisfied with provider attitude and communication (childbirth) (missing RO n = 17, BG n = 353, MD n = 4)	1747 (87.3)	3524 (76.7)	312 (83.9)
Satisfied with provider attitude and communication (postnatal period) (missing RO n = 20, BG n = 401, MD n = 5)	1547 (77.4)	2405 (52.9)	220 (59.3)
Providers informed sufficiently (antenatal period) (missing RO n = 24, BG n = 54, MD n = 4)	1594 (79.9)	3883 (79.3)	251 (67.5)
Providers informed sufficiently (childbirth) (missing RO n = 24, BG n = 90, MD n = 4)	1539 (77.2)	3726 (76.7)	280 (75.3)
Providers informed sufficiently (postnatal period) (missing RO n = 31, BG n = 106, MD n = 5)	1344 (67.6)	2704 (55.8)	218 (58.8)
Acceptability			
Important to receive maternal care services (antenatal period) (missing RO n = 19, BG n = 47, MD n = 5)	1841 (92.1)	4885 (99.6)	347 (93.5)
Important to receive maternal care services (childbirth) (missing RO n = 20, BG n = 65, MD n = 8)	1946 (97.4)	4872 (99.7)	365 (99.2)
Important to receive maternal care services (postnatal period) (missing RO n = 32, BG n = 66, MD n = 7)	1821 (91.6)	4858 (99.3)	357 (96.2)

Women from all countries (33.4%–57.2%), and especially from Moldova (57.2%), found the shortage of staff to be the most prevalent problem affecting care availability. In addition, 19.6%–51.9% of women experienced barriers related to waiting lists, slow referrals, and restricted open hours in facilities, with the highest rates in Moldova. Lack of access to adequate maternity care because of insufficient time, transportation, and long distances was slightly less prevalent, but still a meaningful barrier for 15.1%–25.3% of women in the three countries (see Table 2).

In terms of appropriateness of maternity care, women assessed how satisfied they were with provider skills during the maternal period, as well as with the conditions of, and equipment in, care facilities. With respect to provider skills, participants from the three countries were most satisfied with care during childbirth (86.5%–88.9%), and least satisfied with care during the postnatal period (58.8%–74.7%). While women in the three countries were almost equally satisfied with provider skills during childbirth, during the postnatal period, women in Bulgaria showed a much lower satisfaction rate (58.8%) compared to those in Romania (74.7%). The lowest satisfaction with provider skills during antenatal care was among women in Moldova; (74.5%) of Moldovan women reported being satisfied, compared to 86.5%–87.9% in Romania and Bulgaria (see Table 2).

Affordability of maternity care varied highly across the three countries. The data show a high overall prevalence of informal payments (45.7%–80.1%) and use of personal connections (34.3%–63.8%) when utilizing maternity care. Even though informal payments and using personal connections are most prevalent in Moldova, they are also high in Bulgaria and Romania; 66.2%–78.6% of women from the three countries paid out-of-pocket for maternity care services. The highest financial burden was reported by women in Romania (43%) compared to Bulgaria (35.5%) and Moldova (22.2%) (see Table 2).

Regarding approachability, women were least satisfied with the communication styles and attitudes of health workers during the postnatal period (52.9%–77.4%) and most satisfied during childbirth (76.7%–87.3%). Results from all three countries show that women were least satisfied with the provision of information from their care providers during the postnatal period (55.8%–67.6%) (see Table 2).

In terms of acceptability, almost all women believed it was important to receive care during antenatal, intrapartum, and postnatal periods (91.6%–99.7%). Nevertheless, the care acceptance rate, especially during the antenatal and postnatal periods, was somewhat lower in Romania and Moldova compared to Bulgaria (see Table 2).

3.3 | Regression analysis

Health complications during the perinatal period and fewer antenatal care visits were significantly associated with barriers to the availability of adequate care in all three countries (i.e., shortage of human resources, geographical distance, time, waiting lists, transportation, and facility opening hours). Similarly, with regard to appropriateness, having health complications during the perinatal period and fewer antenatal care visits, but also giving birth in a public facility, are significantly associated with lower user satisfaction with provider skills and care facilities (see Table 3 for illustration and Appendix for more details).

Indicators related to the affordability of maternity care show that in all three countries, having health complications during the perinatal period is significantly associated with paying out-of-pocket, experiencing a financial burden, paying informally, and using personal connections, while giving birth in a private facility is significantly associated with paying less informally and using fewer personal connections. Furthermore, CB is significantly associated with facing financial burdens, all forms of out-of-pocket payments, and having to use personal connections to get care in Romania and Bulgaria, but interestingly, we found the opposite association in Moldova. With respect to approachability, in all three countries, women who had fewer health complications and a higher number of antenatal visits were more satisfied with the way providers approached them, and giving birth in a private facility increased satisfaction during the postnatal period (i.e., attitudes, communication, and provision of information) (see Table 3 for illustration and Appendix for more details). No regression analysis was performed on acceptability of maternal care, because of the lack of variation in the indicators in this category.

4 | DISCUSSION

Our results identify several shortcomings in the provision of maternity care in Romania, Bulgaria and Moldova, including high rates of CBs, low number of antenatal and postnatal care visits, existence of informal payments, and use of personal connections to obtain desired care. Women who have health complications, women who have a CB and those who give birth in a public facility and have fewer antenatal check-ups are more likely to face access-related barriers.

The most striking result is the extremely high rate of CB, especially in Romania and Bulgaria. Official statistics on the rate of CB are generally lacking. Nevertheless, previous empirical evidence is in line with our findings. Some sources suggest that in 2015 in Bulgaria the rate of CB in public facilities was 35%–45% and in private facilities 65%–95%, while in Romania the overall rate of CB in 2012 was reported to be 41.2%.[18,19] A study on CBs in Romania suggests that financial incentives for health care providers, as well as women's beliefs and fears, contribute to the high number of surgical deliveries.[19]

Another important shortcoming identified in our study is the insufficient number of antenatal visits, especially in Moldova. WHO recommends a minimum of eight antenatal

TABLE 3 Availability and appropriateness of maternal care in Romania (N = 2018), Bulgaria (N = 4951) and Moldova (N = 376). Logistic regression

	Availability			**Appropriateness**		
	Experienced access barriers due to time, transport, distance			**Satisfied with maternal care provider skills (childbirth)**		
	Romania aOR (95% CI)[a]	**Bulgaria aOR (95%CI)**	**Moldova aOR (95%CI)**	**Romania aOR (95% CI)[a]**	**Bulgaria aOR (95% CI)[a]**	**Moldova aOR (95% CI)[a]**
Health complications in maternal period	**1.852 (1.423–2.412)**	**1.744 (1.473–2.064)**	1.389 (0.838–2.303)	**0.473 (0.358–0.626)**	**0.484 (0.398–0.588**	**0.359 (0.186–0.691)**
Giving birth in private facility	**1.844 (1.074–3.165)**	**1.274 (1.038–1.563)**	1.042 (0.458–2.371)	**3.164 (1.585–6.314**	**1.808 (1.374–2.378)**	1.432 (0.391–5.250)
Giving cesarean birth	0.888 (0.681–1.157)	1.138 (0.968–1.339)	0.651 (0.326–1.297)	**1.581 (1.200–2.084)**	**1.741 (1.439–2.106)**	0.807 (0.349–1.868)
Number of antenatal visits	**0.919 (0.857–0.985)**	**0.937 (0.893–0.983)**	1.006 (0.863–1.174)	**1.218 (1.130–1.312)**	**1.114 (1.054–1.178)**	1.123 (0.904–1.395)
Number of postnatal visits	0.940 (0.878–1.007)	**0.905 (0.849–0.964)**	0.961 (0.828–1.114)	1.046 (0.973–1.123)	**1.124 (1.043–1.212)**	1.077 (0.882–1.314)
Public and private sector of care reception	1.029 (0.769–1.378)	**1.404 (1.150–1.716)**	–	0.892 (0.662–1.202)	0.980 (0.795–1.208)	–
Private sector of care reception	0.823 (0.494–1.371)	**1.413 (1.089–1.833)**	–	0.778 (0.474–1.279)	1.088 (0.795–1.489)	–
Sector of care reception in Moldova	–	–	1.340 (0.701–2.561)	–	–	1.824 (0.668–4.983)
Nagelkerke R square	0.058	0.042	0.081	0.115	0.072	0.106
Model significance	$P = 0.000$	$P = 0.000$	$P = 0.046$	$P = 0.000$	$P = 0.000$	$P = 0.043$
	Affordability			**Approachability**		
	Experienced financial burden			**Satisfied with provider attitude and communication (childbirth)**		
	Romania aOR (95% CI)[a]	**Bulgaria aOR (95%CI)**	**Moldova aOR (95%CI)**	**Romania aOR (95% CI)[a]**	**Bulgaria aOR (95%CI)**	**Moldova aOR (95%CI)**
Health complications in maternal period	**1.668 (1.352–2.057)**	**1.826 (1.588–2.099)**	1.168 (0.663–2.057)	**0.496 (0.374–0.659)**	**0.634 (0.542–0.742)**	0.696 (0.383–1.265)
Giving birth in private facility	**1.274 (0.834–1.948)**	**1.298 (1.100–1.532)**	1.345 (0.520–3.479)	1.517 (0.811–2.837)	**1.767 (1.444–2.162)**	3.343 (0.881–12.689)
Giving cesarean birth	**1.254 (1.021–1.539)**	**1.365 (1.199–1.553)**	1.136 (0.558–2.312)	**1.493 (1.125–1.982)**	**1.226 (1.060–1.417)**	0.892 (0.407–1.953)
Number of antenatal visits	0.956 (0.906–1.0089)	0.998 (0.960–1.039)	0.894 (0.751–1.065)	**1.182 (1.096–1.274)**	**1.089 (1.042–1.138)**	1.113 (0.916–1.353)
Number of postnatal visits	1.005 (0.954–1.059)	0.962 (0.916–1.010)	0.905 (0.766–1.068)	1.012 (0.940–1.088)	**1.173 (1.108–1.243)**	1.026 (0.864–1.219)
Public and private sector of care reception	1.085 (0.869–1.356)	**1.588 (1.357–1.859)**	–	1.050 (0.771–1.430)	0.944 (0.801–1.112)	–
Private sector of care reception	1.331 (0.904–1.961)	**1.593 (1.294–1.961)**	–	1.013 (0.600–1.710)	**1.293 (1.012–1.652)**	–
Sector of care reception in Moldova	–	–	0.968 (0.459–2.041)	–	–	1.031 (0.467–2.279)
Nagelkerke R square	0.109	0.116	0.188	0.077	0.078	0.088
Model significance	$P = 0.000$	$P = 0.000$	$P = 0.000$	$P = 0.000$	$P = 0.000$	$P = 0.073$

Note: **Bold** = identification of significance.

[a]aOR is adjusted for age at childbirth, education level, civil status, household income, number of children and the time of last childbirth.

visits and four postnatal visits for optimal maternal and newborn health outcomes.[20,21] While Moldova faces the highest barriers in the availability of maternity care among the three countries, the most problematic availability indicator in the three countries is the shortage of medical staff. We found that the perceived shortage of maternity care providers is associated with fewer antenatal care visits and the presence of health complications. In other words, women with health complications find the shortage of staff more of a problem than women without complications. The shortage of staff (e.g., in rural areas) results in some women having fewer antenatal care visits. The literature suggests that access to healthcare in rural areas in the three countries is especially poor, as health care professionals are reluctant to work in villages because of the lower standard of living compared to cities.[8,22] The shortage of physicians and nurses can also be explained by professionals emigrating to countries such as Germany, France, and the United States that offer better working conditions and higher incomes.[8,22] To address this problem, incentives for professionals to stay in the country or to work in rural areas could be considered.

Satisfaction with care provider skills and conditions at facilities was more prevalent in the private sector. The low level of satisfaction with maternity care in the public sector can be explained by insufficient government investments, shortage of staff, and inefficient use of scarce public resources in the three countries.[8,11,22]

Our results also indicate that women underutilized postnatal care and were least satisfied with provider skills, communication, and information provision during the postnatal period. These results point to a wider problem of inadequate provision of postnatal care, which is neglected in many countries around the globe.[23]

Participants in our study, especially those in Romania and those with complications, face a financial burden because of out-of-pocket payments, and women who gave birth in public facilities paid informally more often. Previous literature has identified a high incidence of formal and informal out-of-pocket payments for maternity care in the three countries,[8,11] and our study confirms these findings. Furthermore, the (informal) out-of-pocket payments point not only to a high level of informality in the three health systems, but also to potential barriers to accessing care.[9] Participants also reported frequently using personal connections when seeking care, which is another form of informality in the health system. A previous qualitative study in Latvia found that women often used personal connections to ensure faster access to or better quality of care.[3]

We also found that many participants in all three countries were dissatisfied with provider attitudes, especially during postnatal care. Disrespectful or rude communication, lack of explanation, or negative attitudes can contribute to adverse health outcomes and unwillingness to seek care. Our results suggest that giving birth in a public facility, having health complications, and a lower number of antenatal visits are associated with such approachability problems. Addressing these issues by offering additional training to health professionals, for example, could help improve relationships with health professionals, women's experience with care, and ultimately, health outcomes.[24] Disrespectful attitudes and poor communication skills might also be attributed to the shortage of health professionals and the added strain this puts on care providers which can result in health workers feeling overworked and a lack of motivation.[3,8] This means that structural changes and investments in maternity care are urgently needed as well.

4.1 | Strengths and limitations

The findings of our study should be interpreted in the context of its strengths and limitations. The data collection instrument was piloted in a previous study and its translations were pre-tested, which improved measurement accuracy. Yet, it is important to recognize that the generalizability of our findings to all women receiving maternity care in the three countries is limited because of our use of social media networks. At best, the results can be extrapolated to women who gave birth during 2013–2017 and were part of Facebook "mommy groups." Background characteristics among childbearing women, as well as data on how common it is to belong to such Facebook groups in the three countries, are not available, which prevents us from making a comparison with our sample. Another limitation is related to the abundance of information shared on social media. Many eligible participants could have missed the survey invitation. This was to some extent mitigated by sending a reminder, thus allowing the invitation to appear at the top of posted messages a second time. Group administrators were strict with granting access to the groups, and group members can be assumed to be predominantly mothers or mothers-to-be. Eligible respondents were only those who had given birth and had received maternity care in these three countries in the preceding 4 years. Nevertheless, selection bias cannot be ruled out, as more than half of the participants reported having only one child, and women with having their first child might be more likely to participate in such online groups. Furthermore, some women might have been motivated to complete the questionnaire because they had particularly positive or particularly negative experiences. Minor differences in demographic structure, culture, socioeconomic status, general attitude, and level of education might also affect comparability across countries. Moreover, sample size differences in the three countries,

especially the smaller sample size in Moldova, might affect the statistical strength of our findings. Nevertheless, since our study focused on access to appropriate maternity care, our findings on the number of care visits and care satisfaction strongly indicate that further studies, with a more detailed focus on satisfaction, are needed.

4.2 | Conclusions

Our study identifies and compares barriers to access to adequate maternity care in Romania, Bulgaria, and Moldova and explores the association between access-related indicators and various demographic characteristics and health status. We found extremely high rates of CBs in Romania and Bulgaria, as well as a low number of antenatal and postnatal care visits in all three countries, but especially in Moldova. Results also suggest that in all three countries, women who have complications during pregnancy, those who have CBs, those who give birth in a public facility, and those who receive fewer antenatal care visits face barriers to accessing adequate care. These barriers relate to four of the five dimensions of access we examined: availability (i.e., shortage of human resources, geographical distance, time, waiting lists, transportation, and facility opening hours); appropriateness (i.e., satisfaction with provider skills and care facilities); approachability (i.e., attitudes, communication, and provision of information) and affordability of care. Making informal payments and using personal connections were found to be common. Out-of-pocket payments, including informal ones, pose a barrier to access, particularly for women with health complications.

These results will help to inform relevant maternity care stakeholders and underscore the need for a range of measures to improve access to adequate care in the three countries. These measures must involve reducing the financial burden on women during the perinatal period, especially for those having complications and giving birth by cesarean. Furthermore, there is a need for interventions that address informalities in receiving maternity care, improve adequacy of postnatal care provision, and that increase the number of antenatal and postnatal visits women receive. The exceptionally high rates of CB in Romania and Bulgaria must also be reduced.

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CONFLICT OF INTEREST

None.

DATA AVAILABILITY STATEMENT

The data that supports the findings of this study are available in the supplementary material of this article. Additional data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

Ethical Committee of Maastricht University FHMLrec panel assessed the study and granted ethical approval.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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