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Barriers to accessing adequate maternal care in Central and Eastern European countries: a systematic literature review

Elina Miteniece ¹, Milena Pavlova ¹, Bernd Rechel^{3,4}, Wim Groot ^{1,2}

¹ *Department of Health Services Research; CAPHRI; Maastricht University Medical Center; Faculty of Health, Medicine and Life Sciences; Maastricht University; The Netherlands*

² *Top Institute Evidence-Based Education Research (TIER); Maastricht University; The Netherlands*

³ *London School of Hygiene & Tropical Medicine, London, UK.*

⁴ *European Observatory on Health Systems and Policies*

Corresponding author: Elina Miteniece

E-mail address: e.miteniece@maastrichtuniversity.nl

Affiliation address: Duboisdomein 30, Maastricht 6229GT, The Netherlands.

Abstract

Maternal health outcomes in Central and Eastern Europe (CEE) compare unfavorable with those in Western Europe, despite macro-indicators that suggest well-designed maternal care systems. However, macro-indicators at the system level only capture capacity, funding and utilization of care and not the actual allocation of financial and human resources, the quality of care and access to it. It is these latter which are problematic in the CEE region. In this study service-related indicators of access to maternal care in CEE are examined. These include availability, appropriateness, affordability, approachability and acceptability of maternal care.

This study uses a qualitative systematic literature review, analyzing information of peer-reviewed articles published since 2004. Other inclusion criteria included language, setting and publication purpose. The included articles were analyzed using a framework analysis technique and quality was assessed using standardized evaluation checklists.

Results indicate improvements in maternal care. However, availability of care is limited by outdated equipment and training curricula, and the lack of professionals and pharmaceuticals. Geographical distance to healthcare institutions, inappropriate communication of providers and waiting times are the main approachability barriers. Some mothers are unaware of the importance of care or are discouraged to utilize healthcare services because of cultural aspects. Finally, a major barrier in accessing maternal care in the CEE is the inability to pay for it.

Our findings indicate that major gaps in evidence exist and that more representative and better quality data should be collected. Governments in CEE countries need to establish a reliable system for measuring and monitoring a suitable set of indicators, as well as deal with the general social and economic problem of informality. Medical curricula in the CEE region need to be overhauled and there should be a focus on improving the allocation of medical staff and institutions as well as protecting vulnerable population groups to ensure universal access to care.

Key Words: Central and Eastern Europe; maternal care; access; pregnancy; appropriateness; approachability; cost; review.

1. Introduction

The maternal mortality ratio (MMR) in the WHO European Region compares favorably with that in other parts of the world, such as South-East Asia and Africa (18 versus 190 and 500 maternal deaths per 100,000 live births respectively, estimates for 2013) (WHO, 2014). This aggregated indicator however masks substantial disparities across the European countries and hides the relatively high rates in Central and Eastern European (CEE) countries (UN, 2011; UNFPA, 2009). In Albania, Armenia and Georgia, the MMR estimates for 2013 amount to 30-40 maternal deaths per 100,000 live births (WHO, 2014). Within the European Union (EU), the MMR in countries such as Hungary, Latvia and Romania is about 2-4 times higher than the EU average (estimated to be 8 maternal deaths per 100,000 live births in 2013) (WHO, 2014). A higher MMR not only indicates the more frequent occurrence of a tragic event but also suggests shortcomings in the maternal care system (Bouvier-Colle et al, 2012; Wildman et al, 2004; Maruthappu et al, 2015).

Despite the higher maternal mortality in much of the CEE region compared with Western Europe, many macro-indicators of maternal health care are similar and seem to suggest that maternal care systems in CEE countries are well-resourced. Macro-level indicators provide a broad picture of health through aggregate measures that are useful in monitoring health trends and inequalities (Masseria et al., 2007). CEE countries score well on macro-indicators such as coverage of prenatal care (more than 95% of the pregnant women having at least one visit to a prenatal care provider), presence of a skilled attendant at birth (virtually always) and adequate availability of emergency obstetric care (on average 4 facilities per 500,000 inhabitants) (UN, 2011; UNFPA, 2009). CEE countries also spend more on health care than many low-income countries elsewhere in the world. The contradiction between the relatively high MMR and seemingly favorable health system indicators in the CEE region is not surprising since the above indicators only enumerate capacity, funding and utilization of maternal care, but provide no information on the quality of care and the barriers to access, which have been identified as major problems in CEE countries (UNFPA, 2009).

Another drawback of the macro-indicators in the CEE region concerns misreported or underreported data (Wilmoth et al., 2012; UNFPA, 2009). Owing to this, the real situation in the CEE maternal care systems cannot be fully understood if only macro-indicators are taken into account (Columbia et al., 2010). The use of micro-level indicators of service quality and access is needed in addition to macro-level indicators for a comprehensive assessment of healthcare provision, not only in the CEE region but also worldwide (Kelley and Hurst, 2006; WHO, 2006; WHO 2011).

This study analyzes the barriers to accessing adequate maternal care in CEE countries. For this purpose, it systematically reviews the empirical evidence on this topic from 2004 to 2016. Following the framework of Levesque al. (2013), we distinguish five aspects of access:

- availability, which reflects the geographical location, distribution and number of healthcare service points, opening hours, services or providers that the patients can choose from;
- appropriateness, which refers to the technical and professional aspects of care and their adequacy, i.e. what services are provided and how they are provided;
- affordability, which refers to patient payments, including various types of out-of-pocket payments, but also indirect payments that make care less affordable and limit access to services;
- approachability, which reflects the awareness of service availability, transparency and information regarding available treatments and services;
- acceptability, which refers to cultural, traditional and informational aspects that determine whether institutionalized care is accepted by individuals, as well as whether and how often the care being available, accessible and affordable will be demanded.

We systematically searched for empirical studies on maternal care in CEE countries that cover at least one of the above aspects of access. The countries selected for this review are the countries of the WHO European region located in CEE, but excluding the Central Asian countries because of their specific organization and outcomes in maternal care. Thus, the review includes Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Latvia, Lithuania, Kosovo, Macedonia, Moldova, Montenegro, Poland, Russian Federation, Serbia, Slovakia, Slovenia and Ukraine. The five aspects of access are used as themes according to which we extracted and classified relevant information from the publications included in the review. Thus, the study provides evidence to understand the shortcomings in CEE maternal care systems and in particular the barriers to access that exist in this region. This topic has not been addressed in a systematic literature review before. It also identifies gaps in our knowledge on maternity care in the CEE region. Finally, the review might help in defining access-related indicators for the assessment of maternal care provision not only in CEE countries but also in other parts of the world.

2. Methods

This study applied the method of a qualitative systematic literature review to outline the evidence on access to maternal care in CEE countries. By identifying and synthesizing the available evidence based on the framework outlined above, this study design allowed us to gain in-depth insights into the complex problem of accessing adequate maternal care in CEE countries and to outline research gaps in the field.

For the selection of relevant publications, a systematic approach was followed. The literature was initially searched in May 2014 using six databases/search engines, starting with PubMed and being expanded to EBSCO HOST (CINAHL plus), Global Health, Popline, and EMBASE, in order to assure that all relevant articles were identified covering time period of the preceding 10 years (2004-2014). The search was repeated in January 2016 to check for new articles published in 2014-2016.

The main keywords that were used for the article search were: maternal care, access and CEE. These keywords were chosen as they were in line with the main concepts of the research objective. These keywords were used in different variations and combinations. Various keywords chains were tested to identify the one that gave the most effective results (with a low number of irrelevant publications). The final keywords chain used in the systematic literature search in 2014 in PubMed with titles/abstracts filter was as follows:

*(((((("Maternal Health Services"[Mesh]) OR *natal OR "Prenatal Care"[Mesh] OR Matern* OR "Reproductive health services"[Mesh] OR Reproductive health care [Title/Abstract]) AND ("Europe, Eastern"[Mesh] OR "USSR"[Mesh] OR Albania OR Baltic States OR Latvia OR Lithuania OR Estonia OR Bosnia and Herzegovina OR Bulgaria OR Croatia OR Czech Republic OR Hungary OR Kosovo OR Macedonia OR Moldova OR Montenegro OR Poland OR Romania OR Belarus OR Russia OR Serbia OR Slovakia OR Slovenia OR Ukraine OR Armenia OR Azerbaijan OR Georgia OR CEE OR Russian Federation OR Eastern Europe OR Yugoslavia) AND (access OR availab* OR affordab* OR approachab* OR acceptability OR appropriat* OR informal payment* OR payment* OR out of pocket OR autonomy OR utilization OR utilisation)))) AND "last 10 years"[PDat]) AND English [Language] AND ("2004"[Date - Publication] : "2014"[Date – Publication])).*

The final keywords chain used in the systematic literature search in 2016 in PubMed was identical to that in 2014 but with an adjusted limitation for the date of publication. The same for the search in the other databases/search engines.

The search strategy in EBSCO HOST (CINAHL) consisted of the same keywords chain but was adjusted to the requirements in the search engine using the field of abstracts or titles. The database Global Health was reviewed in all fields following the given keywords chain and adjusted to the database-specific search engine. The same keywords chain with extra stratification for the European region was applied in the Popline database. The search in EMBASE applied several inclusion criteria, such as English language and reach in titles/abstracts.

Publication selection criteria included the following: (1) only English language publications; literature in other languages was excluded; (2) only peer-reviewed articles to assure the quality of the evidence reviewed; (3) only publications that referred to geographical settings in the CEE region; (4) only articles published in the period 2004-2014 in the first search in May 2014, and published in 2014-2016 in the second search in January 2016, to gather the most up-to-date information. The relevance of the literature sources that focus on maternal care access in the region was considered and judged by the researchers. Additionally, the reference lists of the collected literature were reviewed to gather additional relevant sources that had been missed in the database search. The same inclusion and relevance criteria were applied. Two articles (Arsenijevic et al., 2014; Stepurko et al., 2013) co-authored by researchers in the team, were indicated as 'golden hits' prior to the review.

The content of the selected publications that met all eligibility criteria was then reviewed. First, essential information from each publication was summarized, then categorized and clustered according to the aspects of access outlined above. Information on study characteristics was also extracted. Finally, the publication characteristics and findings were synthesized in the form of tables and further analyzed qualitatively by pooling the results. The key findings were also presented in a narrative manner.

The quality of the publications was assessed using standardized evaluation checklists. The checklists were developed based on the CASP (qualitative) and EPHPP (quantitative) quality appraisal tool checklists, which were adapted for the needs of the review. Specifically, the validity and reliability of the publications was assessed by analyzing where the sources came from, whether the source was valid and whether they had been peer reviewed (Gordis, 2009). Further assessment criteria included questioning research objectives on which the study was based and if the problem was clear, logically stated and appropriately supported by the literature. Lastly, questions referred to whether there could be another explanation for the relations between variables, and if the findings of a study were applicable to other settings and populations (Wood, 2006). We also checked the quality of our review using the Prisma 2009 checklist (see Appendix A).

3. Results

The literature search in May 2014 yielded an initial list of 357 articles in PubMed that provided 29 relevant articles after the first screening of title and abstract. After the second screening based on the full text, 15 articles were retained. The search in the other databases also provided some relevant publications: EBSCO HOST - CINAHL plus (7 out of 57 articles), Global Health database (9 out of 63 articles), Popline database (2 out of 12 articles), EMBASE (10 out of 174 articles). However, only one of the articles found in these databases was different from the articles identified in PubMed and was added to the database. After reviewing the reference lists of the 16 articles found through the databases, 2 additional articles were added, based on the same inclusion criteria. Thus, in total 18 articles met the inclusion criteria and were included in the literature review. The second search in January 2016 covering the time-period 2014-2016 resulted in three additional articles. Figure 1 presents a flow chart of the systematic literature search.

The two articles suggested as ‘golden hits’ prior to the review appeared during the search in 2014 and matched the inclusion criteria. This suggests that the search strategy was adequate. A detailed description of the articles can be found in Appendix B. In the next section, the key characteristics of the articles are presented, followed by a narrative description of their findings related to availability, appropriateness, affordability, approachability and acceptability of maternal care in CEE countries.

General description of the selected articles and quality assessment

The overall characteristics of the articles included in the review are presented in Table 1. The table shows that most articles (67%) were published between 2009 and 2014, indicating up-to-date results and an increased interest in the topic. Despite searching for publications in the entire CEE region based on all selected countries (see Introduction), no eligible studies were found for Armenia, Bosnia and Herzegovina, Croatia, the Czech Republic, Estonia, Latvia, Moldova, Montenegro, Slovakia and Slovenia. This suggests that up-to-date evidence on this topic is lacking for a large part of the CEE countries. Most of the evidence (71% of the studies reviewed) comes from the CEE countries outside the EU. The majority of the data were collected in healthcare organization settings while one cross-country study does not mention any specific setting. More than half of the

publications directly aimed to examine the quality, access and/or patient payments for maternal care while others provide a general view of maternal health service in CEE countries.

Table 2 provides a summary of the methods of data collection and analysis used in the 21 articles, showing that a qualitative study design was most often used. The studies mainly includes mothers, healthcare professionals and to a lesser extent key informants and secondary data sources. The sample size ranged from a few dozen to a few thousand participants, but most studies include less than 100 participants, due to their qualitative approach. About 20% of the studies are narrative and systematic literature reviews. The systematic reviews cover a diversity of issues and settings, and do not include all studies reviewed here. Interviews are the main data collection source in non-review studies. About 30% of the studies use questionnaires or existing datasets. Table 2 also displays the data analysis approaches that were applied.

The studies were appraised for internal and external validity and reliability, based on the CASP appraisal checklist for qualitative studies and the EPHPP appraisal checklist for quantitative studies. Only two qualitative studies were found to be of high quality (Arsenijevic et al., 2014; Janevic et al., 2011), while the rest was mostly of a medium level of quality. Four qualitative studies scored poorly on the checklist due to insufficient information (Straus et al., 2013; Homan et al., 2010; Parkhurst, Penn-Kekana, et al., 2005; Parkhurst, Danischevski et al., 2005). No qualitative study addressed ethical questions or the researcher's role in the study. Quantitative studies mostly applied cross-sectional study designs (non-experimental designs), leading to a lower quality score for these studies. However, the data analysis methods and validity issues were also poorly addressed in some of these publications, which further lowered their quality score. Articles reporting on mixed method studies were appraised stepwise, i.e. the qualitative and quantitative part were assessed separately. Validity and methodological aspects in these studies were often poorly addressed or rated too positively by the authors in terms of quality. Another weakness was the lack of discussion of study limitations and methodology. Overall, the lack of transparency regarding the research methods applied was a key problem in the studies reviewed, which however did not necessarily mean poor study quality.

Availability of maternal care

On the availability of adequate maternal care, the articles reviewed suggest that most CEE countries face problems with geographical accessibility of adequate services despite the geographic diversity of these countries (e.g. Parkhurst, Penn-Kekana, et al., 2005). Such problems are reported in 70% of the articles. It should be noted however that evidence on this issue is

controversial. While for example in Serbia the maternal wards are spread all over the country and available even in small villages (Arsenijevic et al., 2014), in Kosovo the maternal care provision is irregular, vehicle ownership in rural areas is rare and transportation facilities between rural and urban areas are lacking (Straus et al., 2013; Homan et al., 2010). However, that maternal wards are well distributed throughout the entire territory of Serbia does not ensure that all services offered are adequate and of good quality. In Russia, although accessibility has improved, geographical access to care in rural areas can be difficult (Shuvalova, 2015). Women living in rural areas in Azerbaijan and Ukraine are often late in seeking maternal care due to transportation problems (Stepurko et al., 2013; Habibov, 2011). Lithuanians from Kaunas report minor distance and time barriers for visits but also indicate problems due to busy work schedules of health professionals (Vanagiene et al., 2009). Roma populations in the Balkan countries (as has been documented for Albania, Macedonia and Bulgaria) often face geographical accessibility problems. This primarily refers to the lack of health professionals in the Roma settlements and emergency care providers refusing to travel to their place of residence (Colombini et al., 2012). However, as we will discuss below, challenges of geographical accessibility tend to pale in comparison with the socio-economic factors that provide barriers to approachability and affordability. Accessibility problems in Belarus are relatively minor due to the increased national healthcare expenditure, but transportation in case of emergency is still problematic (Danilovich, 2010).

In addition to problems with the availability of services, problems related to waiting times are also reported. Serbian women face time-related problems regarding referrals, which they have to show in order to be admitted in maternity wards, but referrals expire after a while and are often outdated due to the unpredictability of childbirth (Arsenijevic et al., 2014). Women in some CEE countries (e.g. Serbia and Russia) need to wait for a free bed or necessary medical procedures (Arsenijevic et al., 2014; Larivaara, 2012). However, Roma women in Balkan countries frequently have to wait longer than others due to their ethnicity (Janevic et al., 2011).

Appropriateness of maternal care

Another problem in maternal care in CEE countries is the unavailability of appropriate maternal care services. For example, in Russia, evidence based up-to-date maternal care is practically absent especially in rural areas due to a lack of diffusion of new knowledge among professionals. Even students are taught to work in an old-fashioned manner (Danichevski et al., 2008).

Overall, the availability of adequate care is linked to the education of health professionals and when curricula are outdated, professionals are unable to contribute to the improvement of services they provide (Karimova et al., 2007). Substandard and outdated care in CEE countries (e.g. Russia, Serbia and Ukraine) includes performing routine enema, shaving and recruitment bed position (Arsenijevic et al., 2014; Danishevski et al. 2006; Stepurko, 2013). A study in Serbia also indicates an overall unavailability of skilled nurses who could help the mothers with immediate breastfeeding (Arsenijevic et al., 2014).

Some improvements have however been observed in recent years, mostly as a result of international projects. For example, in some urban health facilities in Ukraine, women are offered a choice with regard to birthing position, improved facility conditions, easier access to necessary services, occasional visits and partner's presence during childbirth as well as stimulation of breastfeeding (Stepurko et al., 2013). Small-scale improvements in this direction are reported in other countries as well, for example in Serbia (Arsenijevic et al., 2014). Russia has undergone significant system changes and succeeded in improving maternal healthcare system with an increase in accessibility and quality evidenced by positive changes in maternal and child health (more than 50% decrease in MMR) (Shuvalova et al., 2015).

Another factor that hinders the availability of adequate maternal care in CEE countries relates to the inefficient allocation of maternal care funding. Studies in Russia report that about 10 years ago, there was an overprovision of maternal care services, twice more midwives than in Western Europe and an extensive infrastructure inherited from the Soviet times, while still having comparably poor health outcomes (Parkhurst, Danishevski et al., 2005; Parkhurst, Penn-Kekana, et al., 2005). However, as reported in a recent article, there is a considerable decrease in MMR due to better trained medical staff and introduction of care standards. Furthermore, more than 20% of Russia's population lives in rural areas, therefore, a more even distribution of healthcare units in non-urbanized areas has led to improved availability of an appropriate care (Shuvalova et al., 2015). At the same time, public funds for necessary medication and modern equipment, especially in rural areas, are insufficient. This imbalanced resource allocation is reported not only in Russia but also for example in Ukraine (Stepurko et al., 2013; Danishevski et al., 2006). Results from Kosovo also show that the inefficient allocation of resources results in antenatal care being available only in urban areas, a lack of ambulance services and limited primary care in rural areas (Straus et al., 2013; Homan et al., 2010).

Affordability of maternal care

The majority of the articles reviewed argue that affordability of services is a key barrier to accessing maternal care in CEE countries. In many CEE countries, basic maternal care services are formally free of charge. In some countries, however, formal out-of-pocket payments are required for extra services. In Poland for example, anesthesia and epidurals have to be fully paid out-of-pocket (Mishtal, 2010). In addition, some population groups fail to obtain health insurance. For example, the majority of the Roma populations in the Balkan countries and 10% of the population in Russia (young mothers, migrants) are being reported to lack insurance coverage (Janevic et al, 2011; Parkhurst, Danishevski, et al., 2005) and have to pay maternal care entirely out of pocket (Colombini et al., 2012). In some CEE countries, maternal care in general is not provided for free and women have to pay formal charges. As a result, in 2003, maternal care access in Azerbaijan and Moldova depended on the wealth gradient (78% out-of-pocket payments). Data from 2003 shows that women in Georgia contributed up to 80% payments out of pocket. Although the situation in these countries might have improved during the years (no recent data found), overall the articles suggest that in case of direct charges, maternal services become unaffordable for most women causing care interruption or delay (Belli et al., 2004). In the Balkan countries, like Serbia and Macedonia, additional charges at institutionalized level exist for the attendance of a ‘guest’ at birth (Arsenijevic et al., 2014; Janevic et al., 2011). For the Roma population, in particular, this attendance seems to be extremely important, but, being unable to pay, creates an unwillingness to have facility-based births (Janevic et al., 2011).

Informal payments are also prevalent in CEE and impose an additional burden on poor population groups, making care unaffordable (Mishtal, 2010). The reasons for these payments include low-paid medical staff and gaps in maternal care funding (Larivaara, 2012; Mishtal, 2010; Parkhurst, Danishevski, et al., 2005). A study in Poland reports on social beliefs that access to good services depends on the ability to ‘bribe’ healthcare professionals (Mishtal, 2010). These informal payments seem to be more common in the maternal sector due to the planned nature of care and the prolonged contact with healthcare providers (Parkhurst, Penn-Kekana, et al., 2005). Belarus reports minor informal payments while such payments are reported to be high in Ukraine (Stepurko et al., 2013; Danilovich, 2010). Women have a rather negative attitude towards monetary informal payments, but they do pay to avoid ‘substandard care’ and to assure a child’s safety or quick access (Arsenijevic et al., 2014; Belli et al., 2004; Larivaara, 2012; Stepurko et al., 2013). Thus, good specialists and necessary procedures can become unaffordable for people who cannot pay those informal costs (Stepurko et al., 2013). In Ukraine, the amount of informal payment is agreed

through bargaining before birth to avoid inconveniences and is mostly paid to the obstetrician who later divides the payment among the hospital team present during the birth (Stepurko et al., 2013). In Hungary, the amount of informal payment is based on income and education; therefore, people with higher status appear to pay higher 'prices' (Baji et al., 2012).

Approachability and acceptability of maternal care

In the studies reviewed, care acceptability problems in CEE countries are frequently attributed to cultural and ethnic differences. Maternal care could be available and affordable but is sometimes not accessible due to a variety of psychological and individual aspects including discrimination towards Roma women. As reported in studies from Balkan countries, Roma women are often denied services and have to give birth on their own, which increases the risk of mortality (Colombini et al., 2012; Janevic et al., 2011). For example, in Bulgaria, Roma women have to bring their own consumables to the hospital while other women do not have to do so. Discrimination is also a reason for verbal abuse or denial of standard care for this group of women in healthcare institutions. In Bulgaria, Roma women give birth in 'Gipsy rooms' with poor conditions. A discriminatory attitude toward Roma women and a derogative attitude create stigma and cause barriers to the use of maternal care. Not being accepted results in an unwillingness to accept the care needed and prolong the delay in seeking maternal care services (Colombini et al., 2012; Janevic et al., 2011). A recent study demonstrates a worrisome magnitude of prenatal care underutilization in Romania, which is mainly due to demographic factors. The care that is available is unused by the most vulnerable groups of society – the young, poor, uneducated and members of ethnic minorities (Stativa et al., 2014).

Psychological accessibility barriers also come from poor communication and relationships between professionals and mothers even when the mothers do not belong to the Roma populations. In Serbia for example, communication with patients in general is inadequate and derogative and providers lack skills to interpret mothers' needs and behaviors (Arsenijevic et al., 2014). Poor bedside manners, disrespect for woman's privacy and cynical nicknames towards the mothers are reported in other countries as well, causing mistrust in the care provider (Larivaara, 2012; Colombini et al., 2012; Janevic et al., 2011; Parkhurst, Penn-Kekana, et al., 2005).

Maternal care is also frequently expert-centered and technically oriented, creating a distance in the relationship between the physician and the expecting mother and leaving questions unanswered. For example, in Ukraine, pregnant women experience a lack of information about maternal services and birthing in general, which pushes them to find answers in blogs and other web-

based sources that are not always reliable (Stepurko et al., 2013). Also in Russia, limits to women's knowledge due to a lack of information or generally low level of health literacy are reported as a barrier to accessing necessary maternal care (Graham, 2006). Even though the situation in Russia has improved, the most disadvantaged in this respect are the ones living in remote areas and/or being poor (Shuvalova et al., 2015).

Furthermore, the willingness of having a child, gender equality and women's autonomy is another issue that limits maternal care acceptance and information seeking (Colombini et al., 2012; Habibov, 2011). A study in Albania reports that women receive maternal care at a lower level than elsewhere in Europe, which is determined by woman's empowerment and decision making at home. Roma women for example often lack health education and are not always aware of the need for maternal care (Sado, Spaho & Hotchkiss, 2014). Since in their living environment the decision-making autonomy is in the hands of men and it is culturally acceptable to handle pregnancy without a professional, the chances of seeking professional care are reduced (Colombini et al., 2012). Studies in Belarus and Azerbaijan also indicated that lower education seems to be a hindering factor for seeking maternal care early (Danishevski et al., 2006; Habibov, 2011).

4. Discussion and conclusions

The evidence obtained through our systematic literature review on barriers to accessing adequate maternal care services in CEE countries indicates a variety of access-related problems. These include problems with reaching the healthcare facility due to distance, poor and derogative attitudes of providers of maternal care and waiting times. Furthermore, there is a lack of evidence-based care and in some instances, outdated equipment and lack of pharmaceuticals. In some CEE countries, access is limited by mothers being unaware of the importance of care and cultural aspects that discourage the utilization of health services. Specifically, some population groups, such as Roma women in the Balkans, are not well accepted by healthcare providers and face discrimination that limits their access to care. However, a major barrier in accessing maternal care in the CEE region is due to the inability to pay for it. This widely prevalent financial barrier can be seen in formal as well as informal out-of-pocket payments.

It should be noted however that most of the studies on this topic have applied a qualitative design and do not provide nationally representative figures on the prevalence of barriers to access. In addition, some studies provide contradictory evidence. This is partly due to the ongoing reforms and changes. For example for the Russian Federation, earlier studies reported

substandard and outdated maternal care (Danichevski et al., 2008), while a more recent study reported on significant system changes and improvements in maternal care (Shuvalova, 2015). Furthermore, our review only included publications in English, so that relevant articles in other languages were not taken on board. There are also major gaps for many CEE countries for which no studies were available. For those countries for which we could identify previous work, some of it is beginning to be outdated. In view of these limitations, our findings cannot be generalized to the entire CEE region, but should only be taken as an indication of potential problems in accessing maternal care.

Our findings indicate the major gaps in evidence that exist and the need for the collection of more representative and better quality data. They also suggest the need for the further strengthening of research capacity in this part of Europe, including the publication of research in international peer-reviewed journals. Access-related indicators for the assessment of maternal care provision could be sought in terms of the availability, appropriateness, affordability, approachability and acceptability of maternal care. The conceptual framework of Levesque et al. (2013), which we applied in our search and analysis of publications, appears useful and relevant. Further research is needed to explore the relevance of alternative conceptual frameworks and to define a set of tangible evidence-based indicators of access that have policy relevance.

The systematic monitoring of these indicators could be instrumental for the acknowledgment of access problems in CEE maternal care systems and could indicate relevant areas for improvement (Graham, 2006). The set of indicators that need to be developed should be universal, to allow for cross-country comparisons and identification of progress, but also country-specific, to allow for relevant assessment of maternal care at the national level. As indicated by our review, some access-related problems, such as geographical accessibility and affordability of care, are reported in several countries, while other problems, such as accessibility of Roma women to maternal care, are more country-related. It is also important that the set of indicators follows a broader and more systematic approach to the assessment of maternal care as recommended by previous research (Countdown Working Group on Health Policy and Health Systems, 2008; Bhutta et al., 2010; Travis et al., 2004). Indicators specifically focused on access to maternal care among vulnerable groups, such as ethnic minorities and poor women, should also be considered.

Governments in CEE countries need to establish a reliable system for measuring and monitoring suitable sets of indicators. As mentioned at the outset of this paper, such systems are not yet in place, as misreported or underreported data in the CEE maternal care sectors are still observed (Wilmoth et al., 2012; UNFPA, 2009). The focus should however not only be on maternal care. Medical curricula in the CEE region need to be overhauled to make sure that health professionals are trained in

cultural sensitivity and interpersonal communication skills. This will be especially important for dealing with problems such as poor bedside manners and derogative communication. Governments will also need to take the responsibility to deal with the general social and economic problem of informality of which widespread informal patient payments are just one expression. Finally, governments in the region have to safeguard vulnerable population groups, especially ethnic minorities and those unable to pay, by ensuring universal access to maternal care.

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Figure 1. Flow chart of the systematic literature search

Identification	<p>Publications identified during the initial search in May 2014</p> <p>PubMed (n=357), EBSCO HOST - CINAHL plus (n=57), Global Health database (n=63), Popline database (n=12), EMBASE (n=174)</p>
Screening	<p>Publications included in the initial screening (title/abstract screening) in May 2014</p> <p>PubMed (n=357), EBSCO HOST - CINAHL plus (n=57), Global Health database (n=63), Popline database (n=12), EMBASE (n=174)</p>
Eligibility	<p>Publications included in the secondary screening (full text screening) in May 2014</p> <p>PubMed (n=29), EBSCO HOST - CINAHL plus (n=7), Global Health database (n=9), Popline database (n=2), EMBASE (n=10)</p>
Inclusion	<p>Publications included in the final list for analysis after excluding duplicates, reviewing reference lists, and carrying out the second search in January 2016</p> <p>PubMed (n=15), all others (n=1), reference lists (n=2), search in Jan 2016 (n=3)</p>

Table 1. Overall characteristics of the 21 articles included in the review

Characteristic of the publication	Number of publications (%)	Publication reference number (See Appendix C for reference list)
Year of publication		
2014-2016	4 (19)	[1; 19; 20; 21]
2009 - 2013	11 (52)	[2,3,4,5,6,7,8 9,10,11, 12]
2004 - 2008	6 (29)	[13, 14, 15, 16,17, 18]
Origin of the study		
EU CEE countries (Bulgaria, Lithuania, Hungary, Poland, Romania,)	7 (29)	[4, 5, 6, 9, 12, 14, 20]
Non-EU CEE countries	17 (71)	[1, 2, 3, 4, 6, 7, 8, 10, 11, 13, 14, 15, 16,

(Albania, Azerbaijan, Belarus, Georgia, Kosovo, , Macedonia, Russia, Serbia, Ukraine)		17, 18, 19, 21]
Research setting		
Health care organization	13 (54)	[1, 2, 7, 9, 10, 11, 12, 13, 14 15, 16, 19, 20]
Rural areas and/or urban areas (e.g. households)	9 (38)	[3, 5, 6, 7, 8, 16, 17, 20, 21]
Other	1 (4)	[4]
Unclear	1(4)	[14]
Study objective		
To examine quality and/or access indicators and/or patient payments for maternity care	12 (57)	[1, 8, 3, 5, 18, 6, 7, 9, 11, 12, 20, 21]
To construct a general view of the reproductive/maternal health service situation	7 (33)	[4, 13, 14, 15 16, 17, 19]
To explore the implementation of maternal health guidelines	1 (5)	[2]
To implement family medicine based antenatal care	1 (5)	[10]

Table 2. Summary of the methods of data collection and analysis used in the 21 articles reviewed

Characteristics of the data collection	Number of publications (%)	Publication reference number (See Appendix C for reference list)
Study design		
Qualitative (interviews, open-ended questionnaires, focus groups, consultation)	7 (32)	[3, 4, 6, 7, 10, 17, 18]
Quantitative (literature review, systematic literature review, cross-sectional)	8 (36)	[5, 8, 11, 12, 15,19, 20, 21]
Mixed method approach	5 (23)	[1, 2, 9, 13, 16]
Unclear	2 (9)	[14, 19]
Study population		

Mothers, health care consumers	13 (37)	[1, 3, 6, 7, 8, 9, 10, 11, 12, 15, 18, 20, 21]
Health care providers	9 (26)	[2, 3, 7, 10, 13, 14, 15, 16, 18,]
Key informants	6 (17)	[2, 3, 7, 13, 16, 17]
Review of published and unpublished literature	5 (14)	[1, 4, 16, 17, 19]
Other	2 (6)	[1, 5,]
Sample size		
Less than 100 respondents	6 (27)	[1, 2, 3, 6, 7, 13]
100-1000 respondents	6 (27)	[9, 11, 12, 14, 18, 20]
More than 1000 respondents	5 (23)	[5, 8, 10, 15, 21]
Review of published and unpublished literature	5 (23)	[1, 4, 16, 17, 19]
Method of data collection		
Interview	9 (26)	[1, 2, 3, 7, 9, 13, 16, 17, 18,]
Questionnaire, survey	6 (17)	[2, 9, 11, 12, 15,]
Focus groups	4 (11.5)	[2, 6, 7, 18]
Patients records, administrative files, official guidelines	4 (11.5)	[1, 10, 14, 19]
Existing dataset (e.g., national surveys, published studies)	7 (20)	[1, 5, 8, 16, 17, 20, 21]
Literature review	5 (14)	[4, 9, 16, 17, 19]
Method of data analysis		
Qualitative techniques (e.g. framework analysis)	7 (33)	[3, 4, 6, 7, 10, 17, 18]
Quantitative techniques (statistical analysis)	8 (38)	[5, 8, 11, 12, 15, 19, 20, 21]
Mixed approach (qualitative + quantitative)	5 (24)	[1, 2, 9, 13, 16]
Unclear	1 (5)	[14]

Highlights

- Skilled professionals, up-to-date care and equipment are lacking in CEE
- Distance and travel costs to facility is a barrier mostly in remote areas.
- Care is often expert-centered with poor attitude towards patients.
- Women are lacking information, autonomy and trust of medical doctors.
- Major barrier is the inability to pay the high (in)formal payments.