Introduction
Adequate access to obstetrical services whether through a family physician or obstetrician has been identified as a single significant determinant of reduction in perinatal mortality and low birth weight infants. The cost in terms of human life and perinatal morbidity is heartbreaking. And yet, there is little known about the status of obstetrical services in Kansas as a whole. The result is a lack of focus on policy, education and training systems to provide a systematic approach to the problems of access to adequate prenatal and perinatal care. Underserved urban populations have received some attention in recent years due to the abhorrent fetal mortality rates approaching that of developing nations. But, there are areas of rural and frontier Kansas that have much less than desirable rates of fetal mortality. A network of well-trained family physician providers and obstetricians with ultimate access to tertiary care services as needed is the ideal goal to improve access to obstetrical care in Kansas. The purpose of this study is to provide a pilot survey to begin the process of analyzing the state of obstetrical services in Kansas.

Distribution of OB/GYN physicians is limited due to the needed population ratios to maintain an OB/GYN practice. Typically, an OB/GYN physician needs a population ratio of 1:10,000 and groups of 3 physicians are ideal to maintain call obligations. Thus, many OB/GYNs are located in towns of 25,000 or greater. The distribution of OB/GYN physicians, in Kansas, is therefore limited to areas where the population can support the needs. A map of the current locations of OB/GYN physicians, across the state, per the American College of Obstetrics and Gynecology confirms this supposition. These counties represent the top 25 most populous counties in Kansas. However, family physicians are distributed across the state. Family medicine with OB can provide excellent OB care in areas that would not sustain a practice limited to OB/GYN only. Therefore, it is imperative that adequate training for family medicine physicians to provide OB care is available during residency.

There are many counties, in Kansas, where more than 10 babies were delivered during the year of our study. Each of these locations were identified from public data supplied by the Kansas Department of Vital Statistics. There was no data found for the location of family medicine physicians providing OB services. Therefore, mapping this data and then removing the counties where OB/GYN physicians are located, reveals counties where deliveries occurred without an OB/GYN physician in attendance. The implication is that most of these deliveries were performed by family physicians. In Kansas, a Certified Nurse Midwife (CNM) is required to have a collaborative agreement with a physician. Therefore few, if any, of these counties had deliveries by CNMs. There were some home deliveries recorded but the volume was low. Therefore, family physicians provided the majority of OB services in these counties that would have been otherwise underserved. It is our intent to profile some of the physicians in these counties to inform a larger study in the future.

Background
In Kansas there is a shortage of FM-OB and OB/GYN providers. There is also a maldistribution of family physicians in rural and frontier areas with significant variation in services provided. While large rural areas have adequate obstetrical physician to population ratios, small rural areas with populations of less than 5,000 may have no ready access in their county to obstetrical care. Physicians providing OB services in these rural and frontier areas are
typically family physicians that were trained in obstetrics during residency and many also provide operative OB with C-sections. Attracting rural family physicians to provide obstetrical services in small-town settings, is becoming increasingly difficult. During our preliminary research we found there is little data describing obstetrical services in Kansas. It is our hypothesis that reduction in obstetrical services, in rural and remote areas, in Kansas, is linked to attitudes, behaviors, and levels of training for rural family physicians that are the only reasonable choice provide needed OB services.

Kansas has many small and isolated rural areas. Using the RUCA maps published by WWAMI, Kansas is a largely “isolated rural” state (map 2). The state designates 64.8% (68/105) of Kansas counties as rural or frontier. 36 (34%) have population densities of less than 6.0 persons per square mile, which the federal government designates as frontier. Twenty-five counties are designated full-county Primary Care Health Professional Shortage Areas (HPSAs, Map 3). All 25 are rural counties. 16 counties are not eligible for designation leaving 85% (89/105) of Kansas counties having at least some level of HPSA designation. In order to facilitate comparison with other state level data, we chose to use the Kansas Population Density Peer Groups (Map 1 and Table 1) as designated by the Kansas Department of Health and Environment to define rurality.


<table>
<thead>
<tr>
<th>Population Density Peer Group - 2010 Census</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Density Peer Group</td>
</tr>
<tr>
<td>Urban</td>
</tr>
<tr>
<td>Semi-Urban</td>
</tr>
<tr>
<td>Densely-Settled Rural</td>
</tr>
<tr>
<td>Rural</td>
</tr>
<tr>
<td>Frontier</td>
</tr>
</tbody>
</table>

Table 1: KDHE Kansas Population Density Peer Groups – 2010 Census.
Map 2: Rural Urban Commuting Areas map of Kansas using a 7 digits analysis of the codes by WWAMI Rural Health Research Center.

Map 3: Primary Care Health Professions Shortage Areas from the Kansas Department of Health and Environment, “PRIMARY CARE HEALTH PROFESSIONAL UNDERSERVED AREAS REPORT, Kansas 2013”, Kansas Department of Health and Environment, Bureau of Community Health Systems, Kansas Primary Care Office.
Map 4: Distribution of the surveys received for analysis for the purpose of this study.

Methods

29 Students were assigned to work with a family medicine rural preceptor for their summer course in the Summer Rural Research and Clinical Practice Elective. Students administered the survey (“Family Medicine Obstetrical Services Survey”) to rural physicians for this study in either face-to-face visits or by telephone. Informed consent to participate was obtained before survey questions were asked. Student researchers asked the respondent physicians each question and the student researcher recorded the answer in an electronic survey instrument (REDCap). All student researchers received basic interview training the week before the program began. All student researchers also completed a Human Subjects Committee on-line training course and their Certificates of completed HSC training have been retained. The protocol was approved by the KUMC Institutional Review Board.

The survey included questions about practice demographics, training for obstetrics, decision timing about providing OB services, reasons for providing OB services, and levels of confidence for OB skills. Surveys were then de-identified and distributed to an analysis team to review the recorded responses. Responses, that had some question as to their interpretation, were discussed with the team and a consensus was arrived regarding interpretation. Spread sheets were then analyzed for results. 5 surveys were excluded from analysis since these physicians never provided obstetrical services. The remaining 25 surveys were analyzed for the purposes of this study.

Results

30 surveys were collected from 30 practices in 21 rural counties across Kansas (map 4). 25 of the 30 physicians interviewed indicated that they have provided OB services at some point in their practice. 19 physicians currently provide OB services with an average of 17 years of practice experience. 77% of the physicians surveyed provide operative obstetrics with cesarean sections. None of these physicians felt they needed a fellowship and most felt they received adequate training during residency. 15/25 family physicians made the decision while in medical school to provide OB as part of their practice and 7/25 during residency. Reasons for providing OB services were: enjoy this part of medical practice, felt that it was expected of them by their partners, desire to use their training, use OB as a “practice builder” and “sense of duty”. Family physicians providing OB services reported a high level of perceived skill. Physicians ranked the confidence in their skills as very high (4.4/5) and they self-report that patients (4.7/5), colleagues (4.5/5) and OB/GYN consultants (4.4/5) would view their skill as very high. We asked about their interest in some type of telemedicine for OB. This served two main purposes; a general interest in whether rural family physician would be interested in a telemedicine service to help with their OB patients and the
The second reason was to try to understand their level of confidence in their own ability with OB, including their sense of need for ready access to consultative services. Overall, the physician's interest in a need for telemedicine support was comparatively low. This is consistent with the physicians reported levels of confidence in their OB skills.
Influence of distance to referral vs providing full service OB care

Self-reported OB skills perceptions of self and from others vs years of practice experience

Interest in using telemedicine in OB for either direct patient care or for consults
Conclusions/Discussion

Most physicians surveyed stated that they chose to practice obstetrics during medical school, due to a rural experience, influence of a mentor or other personal reasons. Some physicians made this decision in residency. A larger number surveyed might demonstrate there was a more even distribution. Generally, FM physicians chose to provide OB care because reported it to be an enjoyable part of their practice and is the “right thing to do” for their community. Most also felt it is overall beneficial to their patients and practice, despite the lack of a clear positive financial benefit.

Family physicians providing OB services reported a high level of confidence in the skill set regardless of the number of years in practice. We anticipated that confidence in skill level would increase with the number of years in practice. One source of bias would be that all the physicians surveyed for this study were active preceptors. There may be a tendency for those willing to teach to have a higher level of confidence. It would be helpful to include all FM/OB providers in a future study to remove this as a source of error. This group was also not interested in Telemedicine as a resource for OB care. We felt this was also due to the confidence level and may be different in a broader study.

Outcomes are needed

It is also very interesting that none of the FM/OB surveyed felt a need to do an OB fellowship. These fellowships have existed for more than 20 years. Respondents felt that they received very adequate training during residency and there was no need for a fellowship. Further investigation around this point in the broader survey may be more revealing as to the reasons behind this decision.

This study was limited due to the small number of surveys. However, we feel that it will serve well as a starting point for further investigation into the influence of distance to referral, specific student exposures that influence choice for rural FM and FM/OB, and access to care issues.

Students working with a preceptor at a rural site learn what it’s like to practice in a rural environment and gain an understanding of the work-life balance of a family physician who offers obstetrical services. These opportunities may influence their decision. Further study will be needed to decide the most influential and the most critical timing.

It is critical in policy making and program development to have an accurate comprehensive profile of obstetrical services in Kansas. Locations and numbers of all providers need to be reported to assess adequate access to OB care for pregnant women. Only then can we address any deficiencies related care access. A robust network of providers at all levels of training will be needed to address future OB access issues. It is the hope of this preliminary report that it serves to highlight the need for a more comprehensive analysis.

References

-   Practicing obstetrician gynecologists in Kansas, according to the ACOG Physician Lookup, Accessed: 3/7/2012.
- Katy Kozhimannil PhD, MPA; Peiyin Hung MSPH; Maeve McClellan BS; Michelle Casey MS; Shailendra Prasad MBBS, MPH; and Ira Moscovice PhD; “Obstetric Services and Quality among Critical Access, Rural, and Urban Hospitals in Nine States”; Policy Brief; June 2013.
- Kevin J. Bennett, PhD, John E. Lopes Jr., DHSc, PA-C, Kathleen Spencer, MS, MLS, Saskia van Hecke, BSc; “Rural Women’s Health, NRHA Policy Brief”; January, 2013
- Katy B. Kozhimannil, PhD, MPA; Peiyin Hung, MSPH; Shailendra Prasad, MBBS, MPH; Michelle Casey, MS; Maeve McClellan, BS; Ira S. Moscovice, PhD; “Birth Volume and the Quality of Obstetric Care in Rural Hospitals”; Journal of Rural Health, February 2014.
- Daniel M. Avery, Jr, MD, Editor; “Family Medicine Obstetrics is an Alternative Career Choice to OB/GYN for Medical Students Who Like Obstetrics”; Journal of Family Medicine Obstetrics; Volume 7 Issue 1 (Spring 2013); http://jfmo.cchs.ua.edu/files/2013/02/avery-editorial.pdf