



Maternal outcomes in English-speaking and non- English-speaking women in New England

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Conflicts of interest

- Katharine A. Green, PhD, CNM, FACNM
 - No disclosures, conflicts or disclaimers.

Introduction background

- U.S. : Healthy People 2020 maternal goals:
 - Reduction in morbidity, mortality and complications in childbearing
- WHO (2018) noted:
 - the increasing medicalization of birth
 - “childbirth is a physiological process that can be accomplished without complications for the majority of women and babies.”

WHO recommendations: intrapartum care for a positive childbirth experience (2018).

Theory and barriers to care

- **Healthy Migrant Theory:** those who are immigrants are likely to be healthier than the general receiving population.
 - In U.S., 23% of babies are born to immigrant women.
 - Neonates with improved outcomes if born to women not acculturated
- **Language proficiency:**
 - Nearly 20% U.S. population does not speak English at home; 8.6% U.S. population unable to communicate in English
 - Language acquisition is considered to be a proxy marker for acculturation
 - Communication in English considered to be a proxy marker for acculturation in the U.S.

Morbidity and mortality rates

- In the U.S., maternal morbidity and mortality rates during childbearing are increasing.
 - 2015 U.S. data: Maternal morbidity (27%) and mortality (26.4/100,000)
- Maternal morbidity and mortality rates in US attributed to many factors:
 - increased obesity, chronic health problems, popularization of cesarean deliveries, more medicalized model of care

Changes in maternal care

- Documented in United States:
 - Increased induction of labor, regional anesthesia, and length of labor
 - Decreased use of episiotomy; decreased operative deliveries
 - Cesarean rate in U.S. ~32% at time of this study
 - U.S. cesarean rates: 2014: 32.2% 2015: 32% 2016: 31.9%
 - In all states, women may be cared for by nurse-midwives or physicians.

- There is good evidence supporting Healthy Migrant Theory in health care
- Question:
 - Is there a difference in maternal outcomes, defined as labor interventions and delivery methods, in English-speaking or non-English-speaking childbearing women?
 - Is any noted difference modified by nurse midwifery versus physician care models?

Methods

- Quantitative, retrospective data analysis
 - 3 years of labor and delivery records of women admitted to a tertiary care center in an urban area
 - 23 to 42 weeks' gestation, language, and care provider data.
- Sample size determination:
 - Power Analysis: sample needed = 787: $f = 0.10$ (small effect size) and $\alpha = 0.01$

Methods

- Final sample N=11,656 labor and delivery records from relatively normal childbearing women > 23 weeks gestation with singleton pregnancies
- Data analyzed using descriptive statistics and Chi squared using SPSS.

Variables

Domain	Variable name	Variable type
Language	Preferred language	Independent
Provider	Provider type	Independent/ Moderating
Labor interventions	Induction, augmentation of labor, anesthesia use, Artificial rupture of membranes (AROM)	Dependent
Delivery Outcomes	Spontaneous vaginal delivery (SVD), operative vacuum and forceps deliveries, cesarean delivery (C/S), vaginal birth after cesarean (VBAC)	Dependent
Other maternal Outcomes	Antibiotic administration, postpartum hemorrhage (PPH), episiotomy/ soft tissue trauma	Dependent
Environmental factors	Religious affiliation, safe home environment, place to live, social support during labor, insurance type	Sample characteristics

Findings: Language and labor

- 16.6% of women preferred to communicate in language other than English
- **Labor:**
 - Women who did not speak English were:
 - Less likely to receive epidural anesthesia, have support person present, or have periurethral tears.
 - more likely to receive general or pudendal anesthesia.
 - No significant differences found:
 - Induction/augmentation of labor, methods of induction of labor, external or internal electronic fetal, uterine monitoring, or artificial rupture of amniotic membranes

Findings: Delivery/ postpartum

- **Delivery:** Women who did not speak English:
 - Were more likely to attempt and succeed at vaginal births after cesarean section
 - Were less likely to have second degree or periurethral lacerations.
- **Postpartum:** Women who did not speak English:
 - Were more likely to have a postpartum hemorrhage following vaginal delivery.
- **Other:** no significant differences by language:
 - in delivery methods or lacerations
 - Antibiotic use or postpartum hemorrhage after cesarean

†p<.10. *p<.05. **p<.01. ***p<.001	All (N=11655)		Language				χ ²		
			English		Non-English		Total		
	n No	n Yes	MD	CNM	MD	CNM	English	Non-English	Total
Vaginal delivery	3760	7895	62.2%	93.4%	59.6%	88.7%	646.0***	138.0***	777.2***
NSVD	4074	7581	59.7%	90.3%	56.7%	86.2%	600.4***	135.9***	730.1***
Operative vaginal delivery	11341	314	2.6%	3.1%	2.8%	2.5%	1.5	0.1	0.8
Vacuum	11381	274	2.2%	2.9%	2.3%	2.5%	3.3†	0.0	2.9†
Forceps	11615	40	0.4%	0.2%	0.5%	0.0%	1.9	2.3	3.6†
Primary cesarean section	9557	2098	20.8%	5.0%	21.6%	8.1%	246.0***	43.8***	286.9***
Repeat cesarean section	10003	1652	16.8%	1.6%	18.7%	3.1%	278.9***	69.3***	345.2***
C/S reason: prolong labor	11295	360	3.5%	1.2%	3.7%	1.5%	24.5***	6.0*	30.2***
C/S reason: CPD	11554	101	1.0%	0.3%	1.2%	0.2%	8.2**	3.9†	11.7**
Attempted VBAC	11257	398	3.0%	3.8%	3.9%	6.7%	3.0†	6.2*	8.9**
Achieved VBAC	11296	359	2.7%	3.4%	3.7%	6.5%	2.4	6.9**	8.6**
Episiotomy	11353	302	2.5%	3.7%	2.0%	2.1%	7.6**	.02	6.0*
Vaginal laceration	10819	836	6.7%	8.9%	7.7%	6.7%	9.9**	.56	6.2*
Perineal laceration	8350	3305	25.6%	39.7%	26.9%	37.4%	142.2***	18.9**	160.5***
1 st degree	8317	1151	8.4%	14.8%	9.4%	16.7%	161.1***	25.1***	183.9***
2 nd degree	8317	2029	16.4%	22.7%	16.2%	18.0%	161.1***	25.1***	183.9***
3 rd degree	8317	136	0.8%	2.3%	1.3%	2.3%	161.1***	25.1***	183.9***
4 th degree	8317	22	0.2%	0.1%	0.3%	0.2%	161.1***	25.1***	183.9***

Findings: moderating factor

Type of care provider on language use: delivery

- Women who did **not** speak English and received care from **nurse midwives**:
 - Were more likely to attempt and achieve vaginal delivery after cesarean than if received care from physician
 - Were more likely to deliver via cesarean section than English-speaking women that received care from nurse midwives.

Findings: moderating factor

- Women did **not** speak English and received care from **physicians** were:
 - less likely to have labor induced, receive local anesthesia, receive episiotomies, or have perineal lacerations.
 - more likely to have cesarean deliveries when compared to English speaking women who saw physicians.
- All women who did **not** speak English were more likely to have postpartum hemorrhage, no matter what type of care provider.

Revised analysis by degree of language use

Variable	N	All Cesarean		X ²
		no	yes	
MD care provider				
Spoke English	11620	62.4%	37.6%	17.4***
Said spoke English, later needed interpreter	11620	55.3%	44.7%	17.4***
Did not speak English	11620	64.7%	35.3%	17.4***
CNM care provider				
Spoke English	11620	93.3%	6.7%	11.6**
Said spoke English, later needed interpreter	11620	89.5%	10.5%	11.6**
Did not speak English	11620	88.3%	11.7%	11.6**
†p<.10. *p<.05. **p<.01. ***p<.001				

Conclusions

- Women had improved delivery outcomes if they were unable to communicate in English when compared to English-speaking women if received care from physician.
- Healthy Migrant Theory was substantiated or not refuted in this sample by maternal delivery outcomes, although not by use of all labor interventions.
- Midwifery care protective related to method of delivery in essentially normal population
 - further analysis needed

Recommendations

- All patients preferring a non-dominant language
 - offer translation services
 - do not assume that comprehension exists without a professional translator
- Care should be taken that no bias or differentiation in treatment occurs based on language use

Limitations

- Retrospective study
- Missing data limited analysis
- There may be multiple uses for interventions: Medications and techniques
- Admission type of care provider used as variable; could change during hospitalization

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