



# LUND UNIVERSITY

## Perinatal mortality among immigrants from Africa's Horn: The importance of experience, rationality, and tradition for risk assessment in pregnancy and childbirth

Essén, Birgitta

2001

[Link to publication](#)

### *Citation for published version (APA):*

Essén, B. (2001). *Perinatal mortality among immigrants from Africa's Horn: The importance of experience, rationality, and tradition for risk assessment in pregnancy and childbirth*. [Doctoral Thesis (compilation), Obstetric, Gynaecological and Prenatal Ultrasound Research]. Department of Obstetrics and Gynecology, Lund University.

### *Total number of authors:*

1

### **General rights**

Unless other specific re-use rights are stated the following general rights apply:

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: <https://creativecommons.org/licenses/>

### **Take down policy**

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117  
221 00 Lund  
+46 46-222 00 00

Department of Obstetrics and Gynaecology, Malmö University Hospital,  
Lund University

# **Perinatal mortality among immigrants from Africa's Horn**

**The importance of experience, rationality, and tradition  
for risk assessment in pregnancy and childbirth**

**Birgitta Essén**

**Malmö 2001**



# ABSTRACT

This thesis is an exploration of the possible effects of maternal country of origin on the risk of perinatal mortality (PNM). Increased risk of PNM was found among infants of foreign-born women delivering in a Swedish hospital between 1990-1995. After adjustment for risk factors, however, the finding only held true for a subgroup of women from Ethiopia and Somalia (ES).

In searching for the mechanism behind this observation, an anthropological study of Somali women was undertaken, yielding the hypothesis that experiences and notions of childbirth brought from their country of origin resulted in certain beliefs and pregnancy strategies of which Swedish caregivers were unaware. These factors, combined with miscommunication, may have occasioned sub-optimal care and heightened the risk of PNM.

In order to test this hypothesis, an audit of all perinatal deaths to ES mothers in Sweden was compared to a matched cohort of Swedish women. Sub-optimal factors associated with PNM were noted with significantly greater frequency among the ES mothers. The audit showed that potentially avoidable deaths (e.g., intraparturial and neonatal deaths, as well as SGA stillbirths) could be related to *maternal pregnancy strategies* (such as avoiding C/S or not seeking perinatal care when needed), *deficiencies in medical care* (inadequate surveillance of IUGR or intraparturial CTG), and verbal *miscommunication*.

However, no association was found between female circumcision and PNM. Circumcised women had in fact a *lower* risk of prolonged labour, and had a significantly *shorter* second stage of labour, as compared to non-circumcised women.

It was concluded that the higher incidence of PNM appears partly to be due to an unfortunate interaction between certain pregnancy strategies practiced by ES women and the performance of Swedish perinatal care services. The pregnancy strategies in question were related to poor health care experience, rationality, and tradition regarding childbirth in their countries of origin. Lack of awareness of these circumstances could be linked to sub-optimal perinatal care in the many of the instances studied.

A greater familiarity among clinicians in the Swedish perinatal health care services with this background may decrease the risk of PNM in ES women by focusing on patient education, interpersonal communication, and improved foetal surveillance. The assertion made in the past linking PNM to prolonged labour due to circumcision in a high resource country like Sweden, found little support in this study.

*Key words: Perinatal mortality, immigrants, ethnic background, sub-optimal care, acculturation, female circumcision, epidemiology, anthropology, perinatal audit*



# **Perinatal mortality among immigrants from Africa's Horn**

**The importance of experience, rationality, and tradition  
for risk assessment in pregnancy and childbirth**

**Birgitta Essén**  
Leg. läkare

Institutionen för obstetrik och gynekologi,  
Universitetssjukhuset MAS, Malmö, Lunds universitet

## **Akademisk avhandling**

som med vederbörligt tillstånd av Medicinska fakulteten vid Lunds  
Universitet för avläggande av doktorexamen i medicinsk vetenskap  
kommer att offentligen försvaras i Jubileumsaulan, Medicinskt  
forskningscentrum (MFC), ingång 59, Universitetssjukhuset MAS,  
Malmö,

lördagen den 22 september 2001, kl. 09.15

Fakultetsopponent: Professor Ulf Högberg  
Obstetrik och gynekologi, Inst för klinisk vetenskap, Umeå universitet



*Jag minns en dag på Oceanen  
emot oss kom ett ensamt skepp  
jag stod och tittade vid relingen  
I skeppets akterstäv  
fladdrade en fana  
Där vinkade den svenska flaggan  
Då tänkte jag, att dessa män  
och kvinnor där på skeppet far vår väg tillbaks  
Vi seglar bort – de seglar hem*

*Hemma  
var ligger det nånstans  
kan nån ge svar  
Nu är det midsommar och dans  
hos mor och far  
Vägen vi färdas den bär bort  
aldrig tillbaka*

*En plats där jag får vara stilla  
där ingen tränger sig in på  
Jag vill få skapa mig ett eget bo  
för mig och för min man  
och för våra ungar  
Och tänk att äntligen få vila  
få sova i sin egen säng*

*Hemma  
var ligger det nånstans  
Vem kan ge svar  
Ja, vi ska ta dej till  
en plats där du får stanna  
du ska snart få komma hem*

”Hemma” från musikalen ”Kristina från Duvemåla”,  
text av Björn Ulvaeus, får symbolisera  
invandrarkvinnans kluvna känslor i ett tidlöst perspektiv

**To my mother Gudrun**





# CONTENTS

<b>ABSTRACT</b>	<b>3</b>
<b>CONTENTS</b>	<b>9</b>
<b>LIST OF ORIGINAL PUBLICATIONS</b>	<b>11</b>
<b>ABBREVIATIONS</b>	<b>12</b>
<b>INTRODUCTION</b>	<b>13</b>
<i>Is there still a need for adjusting the resource allocation of perinatal care in the Swedish society?.....</i>	<i>13</i>
<i>The definition of an immigrant woman.....</i>	<i>14</i>
<i>Acculturation .....</i>	<i>14</i>
<i>The pregnant population in Sweden from an immigration perspective.....</i>	<i>15</i>
<i>Maternal mortality .....</i>	<i>17</i>
<i>Demographic data of the Somali-born population in Sweden .....</i>	<i>18</i>
<i>The effect of communication on perinatal outcome.....</i>	<i>20</i>
<i>Female genital mutilation/circumcision/cutting (FGM/C).....</i>	<i>21</i>
<b>STUDY POPULATIONS AND METHODS</b>	<b>24</b>
<i>Choice of methods .....</i>	<i>24</i>
<i>Article I.....</i>	<i>26</i>
<i>Article II .....</i>	<i>27</i>
<i>Article III.....</i>	<i>29</i>
Audit Procedure	29
<i>Article IV .....</i>	<i>33</i>
<i>Article V.....</i>	<i>34</i>
<b>AIMS, MAIN RESULTS, AND COMMENTS</b>	<b>36</b>
<i>Are foreign-born women and their infants at increased obstetric risk in Sweden? (Article I).....</i>	<i>37</i>
The sub-Saharan African group	37
Comments	39
<i>Are there attitudes and pregnancy strategies of Somali immigrant women that might affect perinatal outcomes? (Article II).....</i>	<i>40</i>
Pregnancy experiences	41
Nutrition habits	41
Delivery experiences	42
FGM/C	42
Social network	42
Comments	43
<i>Was there a difference in the standard of perinatal care between women from Africa's Horn and Sweden with regard to perinatal mortality in Sweden? (Article III).....</i>	<i>44</i>
Comments	46
<i>Is there an association between FGM/C and PNM? (Article IV).....</i>	<i>48</i>
Comments	50
<i>Is there an association between FGM/C and prolonged labour? (Article V).....</i>	<i>50</i>
Comments	51

<b>GENERAL DISCUSSION</b>	<b>53</b>
<i>Perinatal mortality among immigrants from Africa's Horn</i> .....	53
<i>A historical reflection</i> .....	65
<b>GENERAL CONCLUSIONS</b>	<b>67</b>
<b>SUMMARY IN SWEDISH</b>	<b>70</b>
<i>Perinatal dödlighet bland invandrare från Afrikas Horn</i> .....	70
<i>Är det behäftat med ökad risk att vara invandrare och föda barn i Sverige?</i> .....	70
<i>Kan barnaföderskans graviditetsstrategier ha ett samband med perinatal dödlighet?</i> .....	72
<i>Perinatalvård på lika villkor i Sverige?</i> .....	73
<i>Har kvinnlig omskärelse något samband med perinatal dödlighet eller ett utdraget förlossningsförlopp?</i> .....	74
<i>Slutsatser</i> .....	75
<i>Framtida perspektiv</i> .....	75
<b>SUMMARY IN SOMALI</b>	<b>77</b>
<b>CLINICAL RECOMMENDATIONS</b>	<b>87</b>
<i>The importance of experience, rationality, and tradition for risk assessment in pregnancy and childbirth</i> .....	87
Patient information	87
Medical surveillance during pregnancy and delivery	87
Information for women from Africa's Horn	88
Health administrators	88
<b>CLINICAL RECOMMENDATIONS IN SWEDISH</b>	<b>90</b>
<i>Vikten av erfarenhet, rationellt tänkande och traditioner vid riskbedömning av gravida invandrarkvinnor från Afrikas Horn</i> .....	90
Patientinformation	90
Medicinsk övervakning under graviditet och förlossning	90
Information till kvinnor från Afrikas Horn	91
Beslutsfattare inom hälso- och sjukvården	91
<b>CLINICAL RECOMMENDATIONS IN SOMALI</b>	<b>93</b>
<b>CONTRIBUTORS</b>	<b>97</b>
<b>REFERENCES</b>	<b>99</b>
<b>APPENDIX</b>	<b>111</b>
<i>Article I</i> .....	113
<i>Article II</i> .....	123
<i>Article III</i> .....	131
<i>Article IV</i> .....	145
<i>Article V</i> .....	157

## LIST OF ORIGINAL PUBLICATIONS

The dissertation “Perinatal mortality among immigrants from Africa’s Horn – the importance of experience, rationality, and tradition for risk assessment during pregnancy and childbirth” is based on the following articles, referred in the text by Roman numerals. The original articles are presented in “Appendix”.

- I Essén B, Hanson SB, Östergren P-O, Lindqvist GP, Gudmundsson S.  
**Increased perinatal mortality among sub-Saharan immigrants in a city-population in Sweden**  
*Acta Obstet Gynecol Scand* 2000;79:737-43
- II Essén B, Johnsdotter S, Hovellius B, Gudmundsson S, Sjöberg N-O, Friedman J, Östergren P-O.  
**Qualitative study of pregnancy and childbirth experiences in Somalian women resident in Sweden**  
*Br J Obstet Gynaecol* 2000;107:1507-12
- III Essén B, Bödker B, Sjöberg N-O, Langhoff-Roos J, Greisen G, Gudmundsson S, Östergren P-O.  
**Are some perinatal deaths in immigrant groups linked to sub-optimal perinatal care services? Perinatal audit of infants to women from Africa’s Horn delivered in Sweden 1990-96**  
*Br J Obstet Gynaecol, Accepted for publication May 2001*
- IV Essén B, Bödker B, Sjöberg N-O, Gudmundsson S, Östergren P-O, Langhoff-Roos J.  
**Is there an association between female circumcision and perinatal death?**  
*Submitted*
- V Essén B, Sjöberg N-O, Östergren P-O, Gudmundsson S, Lindqvist GP.  
**No association between female circumcision and prolonged labour: a case control study of immigrant women giving birth in Sweden**  
*Submitted*

Articles I and II are reproduced by permission of the publishers.

## ABBREVIATIONS

<b>ANC</b>	Antenatal Care
<b>AS</b>	Apgar Score
<b>CI</b>	Confidence Interval
<b>C/S</b>	Caesarean section
<b>CTG</b>	Cardiotocography
<b>ES</b>	Ethiopia, Somalia
<b>FGM/C</b>	Female Genital Mutilation, Circumcision, or Cutting
<b>GNP</b>	Gross National Profit
<b>hCG</b>	Human Chorionic Gonadotrophin
<b>ICD</b>	International Classification of Diseases
<b>IRDS</b>	Idiopathic Respiratory Distress Syndrome
<b>IUGR</b>	Intrauterine Growth Restriction
<b>NICU</b>	Neonatal Intensive Care Unit
<b>OR</b>	Odds Ratio
<b>PNM</b>	Perinatal Mortality
<b>SD</b>	Standard Deviation
<b>SGA</b>	Small for Gestational Age infant
<b>SSA</b>	Sub-Saharan African
<b>WHO</b>	World Health Organisation

# INTRODUCTION

## *Is there still a need for adjusting the resource allocation of perinatal care in the Swedish society?*

The original idea for this thesis came from observing the encounter between health care providers such as obstetricians and midwives, and pregnant immigrant women. The first question that arose was whether there were differences in pregnancy outcomes between foreign and Swedish-born women. It was observed that there seemed to be a demand among health care providers and administrators for more information concerning the assessment and handling of this special group of women and their infants. Before summarizing the results of this thesis, some background information may be in order.

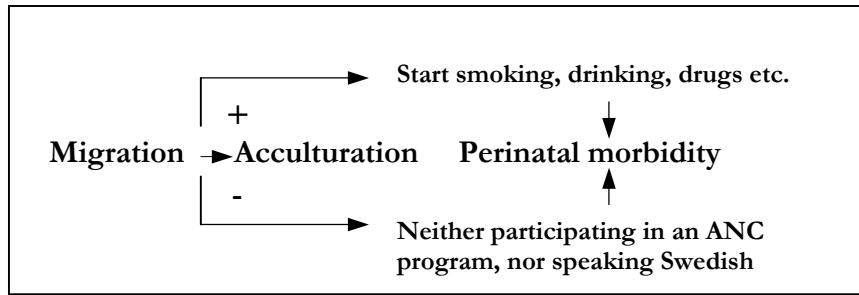
Reducing perinatal and maternal mortality throughout the world has been one of the major challenges for obstetricians for many years. A lot of effort has been made by the World Health Organisation (WHO) in assisting governmental and non-governmental organisations to develop national plans for maternal and perinatal health care, and by allocating resources to those people who are most in need of it (1). Sweden has one of the lowest perinatal and maternal mortality rates in the world, and this decrease in mortality has been partly attributed to socio-economic improvements and better antenatal, delivery, and neonatal care (i.e. perinatal care). Is, then, WHO's call for an adjusted resource allocation in the field of perinatal care still a challenge for a high-resource and high-income country like Sweden? One way to approach this question would be to contrast perinatal outcomes between foreign-born and native-born women in Sweden.

## *The definition of an immigrant woman*

In this thesis, the words migration and immigration will be used as previously defined by other authors in the field (2),(3),(4). International studies have used country of birth to define group membership by ethnic background (5). Ethnicity itself is not used, as it is a very complex term and difficult to measure. Migration has been used solely for movements across national boundaries. In the following, the word “immigrant woman” refers to a woman born outside Sweden but now resident there. The reason for migration has not been taken into consideration, nor has the duration of residence or the legal status of the women in question. Information on paternal country of origin has not been available.

## *Acculturation*

The process of incorporating characteristic ways of living from another culture—referred to as *acculturation*—has been proposed as a factor in perinatal morbidity and mortality (6),(7). The risk of perinatal morbidity could, for example, increase if a woman migrates from an area where smoking is not a common habit among women, to a culture where smoking and drinking are more accepted lifestyles (Figure 1, illustrated by +). On the other hand, consistently refusing to participate in an Antenatal Care (ANC) program, or not successfully learning the language of one’s new country, can be associated with increased risk of perinatal morbidity (Figure 1, illustrated by –). These two levels of acculturation contribute to the worse possible combination of risk habits. Perhaps it is not the immigrant status per se that contributes to the risk mentioned above, but the childbearing woman’s level of acculturation. However, a “low” level of acculturation is not necessarily leading to poor perinatal outcome.



**Figure 1.** Example of how the worst possible scenario of acculturation may lead to perinatal morbidity

Immigration is associated with increased physical and psychological illness; the global immigration process is said to create not only new patterns of disease, but also challenges for the health care system of the country which receives the new immigrants (8). Ethnic background has been shown to have an independent effect on mental illness and suicide (2),(9),(10). Migration and poor health status remained linked, even after adjustment for social position (11),(12).

### *The pregnant population in Sweden from an immigration perspective*

Studies from the 1970s have not demonstrated increased perinatal and infant mortality among foreign-born citizens in Sweden (13),(14). Some studies have shown an even lower perinatal mortality (PNM) among immigrant women (15),(16). In a report issued by the Epidemiological Centre of the National Board of Health and Social Welfare in Sweden, perinatal outcomes from the Medical Birth Registry during the 1980s were compared in the case of socio-economically privileged women and underprivileged women. The socio-economic variables included co-habiting/non co-habiting with the father of the child, maternal profession (academic/non-academic education), living in nuclear family household/living in joint family household, and nationality of



the mother (Swedish or foreign-born). The underprivileged group showed a 50% higher risk of delivering infants weighing less than 2,500g and a higher risk of delivering SGA infants (small-for-gestational-age), compared to the privileged group. However, there was no statistically significant difference between the two groups regarding PNM (17).

In recent years the immigration profile in Sweden has changed. Previously, immigration was mainly labour-market driven and consisted of immigrants originating from other Nordic countries, or the Balkan area. Recent immigrants are mostly refugees who come from many different geographical regions of the world. The population of foreign-born people in Sweden in 1999 consisted of more than 120 different nationalities; 11% of the current Swedish population was born in other countries (2). In 2001, in the city of Malmö (population 259,579), approximately 23% of the population were born in a country other than Sweden (Department of Strategic Development, City Office of Malmö).

A 50% higher PNM among sub-Saharan African immigrants (SSA) in Sweden was described in the 1998 report of the National Board of Health and Social Welfare. No specific national guidelines targeting this group have been developed so far. The changes in geographic background among immigrants may be observed as a new socio-demographic pattern of obstetric outcomes. In the 1990s, cutbacks in the government funding of social welfare programs were instituted, which appear to have led to widening financial gaps between immigrants and the Swedish population, and particularly different socio-economic groups over the last years (18). At many ANC-clinics, the numbers

of planned visits in the national ANC-program, including obstetric consultations, have also been reduced during the 1990s (19).

### *Maternal mortality*

Maternal and perinatal mortality in sub-Saharan Africa is one of the highest in the world. In Somalia, the maternal mortality is particularly high, amounting to approximately 1,600/100,000 live births (20). In the literature, haemorrhage, infection, toxæmia, and obstructed labour are some of the most important factors contributing to pregnancy-related maternal mortality (21), (22). After the classic article of Rosenfield and Maine, “Where is the M in MCH?” (23), and the initiative of WHO’s Safe Motherhood Programme, maternal mortality is unquestionably considered to be a matter of resource allocation. Of all indicators commonly used to compare levels of development between countries, levels of maternal mortality show the widest disparities in health and relevant resources in comparing Sweden and Somalia (20) (Table 1).

**Table 1.** Demographic, health, and economic indicators for inequity, Somalia and Sweden (1990, 1996) (20),(24)

Variables	Somalia	Sweden
Maternal deaths (per 100,000 live births)	1,600	7
Female life expectancy (in years)	43	80
Infant mortality (per 1,000 live births)	131	6
Population coverage of health services (%)		
urban	50	100
rural	15	100
Female adult literacy (%)	6	100
Safe water (%)		
urban	60	100
rural	20	100
GNP/capita (US\$)	290	19,300

A woman's risk of dying each time she becomes pregnant in Somalia is about 1:60. By contrast, in Sweden the risk is 1:14,000 (20). The high rate of maternal mortality is compounded by the high pregnancy rate. If a woman becomes pregnant six times in her *lifetime*, her *risk of dying* is 1:10 in Somalia.

### *Demographic data of the Somali-born population in Sweden*

People from the East African countries of Africa's Horn— Ethiopia, Djibouti, Eritrea, and Somalia (ES)—constitute the majority of the immigrant population in Sweden originating from the sub-Saharan African region (Figure 2). The term sub-Saharan Africa (SSA) is defined by earlier Swedish studies (13),(25). The countries of North Africa that are generally populated by ethnic Arabs are excluded from the SSA definition.

The Somali population in Sweden, approximately 20,000 persons, has been described by the Swedish Government as the most segregated immigrant group in Sweden, as well as the one with the highest unemployment (26). It is a very young group in comparison to other immigrant groups. Nearly 48% of all Somali women in Sweden are of reproductive age. Approximately 65% of the Somali community live in the cities of Stockholm, Gothenburg, Malmö, and Örebro. Their education level is heterogeneous, with approximately 16% being university-trained and about 36% having an elementary school education. Only 2% of those who have emigrated to Sweden have lived there for more than 10 years, and nearly all have experienced a civil war (26).

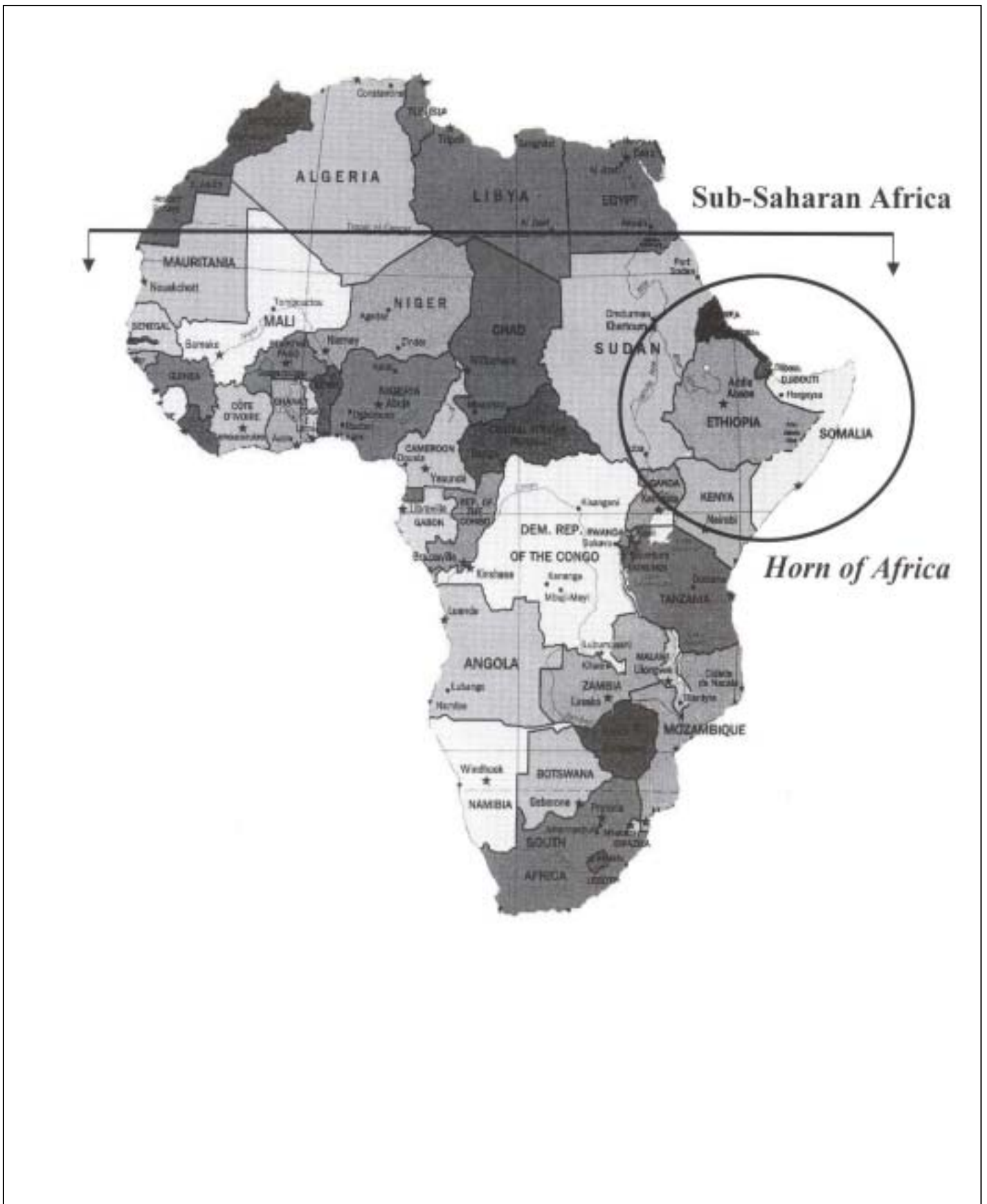


Figure 2. Sub-Saharan Africa (SSA); Africa's Horn; Ethiopia and Somalia (ES)

## *The effect of communication on perinatal outcome*

The native language of the Somali population is Somali, but only since 1972 has it been a written language. This means that many prospective parents originating from Somalia are not able to write their own language, even if they are literate. In addition, there is no Swedish-Somali dictionary. It is difficult to estimate how many Somali immigrants have a good command of the Swedish language. Approximately 61% of the Somalis who entered the Swedish public educational program for immigrants in 1997 completed their courses. In a study of 1,454 students who had Somali as a mother tongue, every third one dropped out of the basic course in Swedish—main reason being lack of child care (26). It is quite likely that Somali *women* speak less Swedish than Somali *men*.

A previous study conducted in California examined the effect of language on reproductive outcomes (27). US-born speakers of English and US-born Spanish speakers had a higher risk profile, although Mexican-born English speakers had a *lower* risk profile for adverse pregnancy outcomes. This difference in risk profile suggests that Mexican-Americans experience positive adaptation to American society by having a better command of the language. In a similar survey of Turkish immigrants in Austria, the perinatal infant mortality rate was found to be higher than in the native Austrian population. The Turkish immigrants studied participated in a routine ANC program, but communication problems were discussed by the authors to be a risk factor for PNM (28).

### *Female genital mutilation/circumcision/cutting (FGM/C)*

Maternal and infant mortality are among the highest in countries where FGM/C is widely practised (21). This is probably the reason FGM/C has been commonly associated with maternal and perinatal mortality although, in the opinion of this writer, there has been no scientifically controlled study of this topic. In a survey conducted in the Sudan, it was mentioned that “non-obstetric factors” such as FGM/C, poor access to local transportation (for travelling to hospitals or delivery centres), and the fact that women do not seek care unless they are seriously ill, all appear to be important non-obstetric factors associated with maternal mortality (29).

Many published articles, weighing the correlation of circumcision and delivery, have claimed a prolongation of the second stage of labour, purportedly due to dystocia induced by scar tissue in consequence of FGM/C. Circumcised women are also said to have obstructed labour more often, culminating in severe infant cerebral damage in the form of cerebral haemorrhage, asphyxia, and perinatal death (21), (30), (31), (32), (33), (34), (35), (36), (37). However, WHO recently announced that no documented evidence had been found to confirm the relationship between FGM/C and obstructed labour (38).

FGM/C is a well-known tradition in many of the SSA countries. However, it is very difficult to validate estimates of the amount of women genitally cut in different SSA regions. It is estimated that 98-99% of all Somali girls are genitally cut in one or another way (33),(34),(39),(40). There are different types of FGM/C known to be practised today. WHO (Fact Sheet Number 153, 1997) includes the following types:

- excision of the prepuce, with or without excision of part or all of the clitoris;
- excision of the clitoris with partial or total excision of the labia minora;
- excision of part or all of the external genitalia and stitching/narrowing of the vaginal opening (*infibulation*);
- pricking, piercing or incising of the clitoris and/or labia; stretching of the clitoris and/or labia; cauterisation by burning of the clitoris and surrounding tissue;
- scraping of tissue surrounding the vaginal orifice (*angurya cuts*) or cutting of the vagina (*gishiri cuts*);
- introduction of corrosive substances or herbs into the vagina to cause bleeding, or for the purpose of tightening or narrowing it;
- any other procedure that does not fall under the definition given above

This tradition has many procedures and, therefore, the trauma could result in many different sequels, something which should be taken into consideration when treating a circumcised woman in Sweden.

Immigration from a country where FGM/C is practised to a country which has outlawed this practice might theoretically be seen as one of the most effective way of abolishing the practice of FGM/C. In Sweden, no legal action has ever been taken against any instance of FGM/C performed in Sweden since the practice was outlawed in 1982 (communication from the Swedish National Board of Health and Welfare). However, the Swedish government has put a lot of effort into prevention by means of disseminating information on FGM/C. In this context, it would seem to be appropriate that one reevaluate the information we now have about obstetrical complications and

FGM/C, as that information is often based on the recitation of earlier articles, or observations made in low-resource countries. Little attention has been devoted to scrutinizing the original source of this information or determining whether the data presented suffer from bias. Recently, academic scholars have discussed FGM/C in a new perspective (40). They have questioned earlier scientific conclusions and the proclamation of international movements against FGM/C— not the practice per se, but the uncertainty of the methods and the reliability of the results, as well as the theories behind FGM/C. Few studies have been performed on the long-term effects of FGM/C on women migrating from a low- to a high-resource area (41),(42),(43). Part of the information used in Sweden is based on traditional statements (36) linking FGM/C with PNM and obstructive labour, even if there has never been any study published on this topic in Sweden. It seems, therefore, of importance to reevaluate earlier information so that one can provide the best care to circumcised women giving birth in a high-resource country like Sweden. Otherwise, there is a risk that strong emotional feelings against the practice of FGM/C may obscure the rational way of evaluating obstetrics risks, and preempt the investigation of other factors which may play a causative role in PNM.



# STUDY POPULATIONS AND METHODS

## *Choice of methods*

Giving birth in a foreign country is a situation that provides little access to the normal traditions and support network of one's native land (44),(45). A pragmatic approach to researching perinatal mortality and morbidity seeks research methods likely to bring about solutions and facilitate change. For this thesis, a combination of medical research methods and techniques used by social anthropologists was the approach chosen to examine a variety of specific questions. The perinatal audit process was chosen as strategy to determine and modify certain factors in the behaviour of clinicians and patients, including lack of knowledge, which can be shown to contribute to PNM (46),(47).

The Ethics Committee of Lund University has approved these studies.

The present thesis is based on four different study populations and four different methodological approaches that have been used to understand more about perinatal outcome among immigrant women in Sweden. The following tables present an overview of the study population, methods, and exclusion criteria, as well as technical dropouts (Tables 2-4).

Table 2. Overview of the study population

Article	Number of subjects	Number of cases analysed	Time period	Setting
I	16,088	10,784 deliveries of Swedish women 4,855 deliveries of foreign born women	1990-95	City of Malmö
II	22	15 interviews with Somali women	1998-99	City of Malmö
III	189	62 perinatal deaths to ES mothers 113 perinatal deaths to Swedish mothers	1990-96	Sweden
IV	63	63 perinatal deaths to FGM/C mothers	1990-96	Sweden
V	2,862	68 deliveries of FGM/C women 2,418 deliveries of non-FGM/C women	1990-96 1995-96	City of Malmö

Table 3. Overview of methods

Article	Type of study	Data collection	Analytic tool
I	Epidemiological cohort study	Birth registry (national and regional)	Logistic regression
II	Qualitative	Semi-structured in-depth interviews	Coded themes Inspiration of modified hermeneutic theory
III	Perinatal audit	Birth registry (national) Medical records	Logistic regression Audit of narratives
IV	Perinatal audit	Birth registry (national) Medical records	Audit of narratives
V	Epidemiological case control	Birth registry (regional) Medical records	Logistic regression, Mann-Whitney

Table 4. Overview of exclusion criteria and technical dropouts

Article	Number of subjects	Exclusion criteria and technical dropouts
I	16,088 -41 <u>-408</u> 15,639	Total deliveries Lost when combining registries Multiple pregnancies Cases analysed
II	22 -7 15	Booked women Not signed up Cases analysed
III	189 -2 <u>-12</u> 175	Perinatal deaths Medical records not found Not matched appropriately Cases analysed
IV	63	Cases analysed
V	2,862 -15 <u>-361</u> 2,486	Total number of deliveries C/S of FGM/C women C/S of non-FGM/C women Cases analysed

### *Article I*

This is a community-based cohort study of 16,088 pregnant women who gave birth at University Hospital MAS, Malmö, from 1990 to 1995. Information about pregnancy, delivery, and the neonatal period was obtained from the perinatal database at the Department of Obstetrics and Gynaecology, Malmö. The information was also correlated with the Swedish Medical Birth Registry and to the Swedish Population Registry by means of each patient's personal identification number, in order to determine the maternal country of origin.

A total of 133 countries of maternal origin were identified, but due to the numerous small nations, they were classified into 8 groups based upon

geographical location (Table 5). Each group was analysed for background factors and perinatal outcome. Univariate Odds Ratio (OR) and 95% Confidence Intervals (CI) were calculated to determine if there were differences in perinatal outcomes among the 8 groups and also if there were differences between Swedish women and women of foreign origin (named as “Foreign origin”). Multiple logistic regression analyses were performed in order to adjust the estimated OR for potential confounders. These analyses were carried out in two steps: Model 1, including background factors, and Model 2, including independent risk factors for PNM. Differences were considered statistically significant if  $p < 0.05$ .

**Table 5.** Classification of women's country of origin

<b>Region</b>	<b>n</b>	<b>(%)</b>
Sweden	10,784	69.0
Other Nordic countries	421	2.7
Western Europe, North America	177	1.0
Eastern Europe	1,546	9.9
Middle East and North Africa	1,529	9.8
Latin America	296	1.9
Asia	530	3.4
Sub-Saharan Africa	356	2.3

## *Article II*

The WHO has recently recommended the use of social science research to bring wider perspective and new insights into the issue of reproductive health (48). Good pregnancy outcomes have a combination of biological, social, and cultural origins. Anthropological research methods together with traditional epidemiological and statistic methods, seem appropriate tools for obstetricians

in providing new information about Swedish perinatal mortality in an integrated perspective.

Interpreter-assisted qualitative in-depth interviews were conducted on women born in Somalia now living in Sweden. Principally, women with birth experience in Sweden and Somalia were recruited. Two women had given birth only in Somalia and 5 only in Sweden. With respect to cultural and religious background, all the women constituted a homogeneous group. Their ages were between 20 and 55, and their childbirth experiences ranged from 2 to 9 children.

The interview topics were perception, attitude, practice, and maternal strategies regarding childbirth, both in Somalia and Sweden. The interview techniques used were widely practised in anthropologic research and were mainly exploratory in connection with the topics mentioned, since little was known from the current literature about motherhood experiences of immigrants in Sweden. The interpreter-assisted interviews were semi-structured and were driven by open-ended questions. The interpreter was informed beforehand about the aim of the study and its topics. Translation was simultaneous, and unclear phrases were clarified immediately. The data collection was characterised by openness to new ideas and follow-up questions during the interviews. It is difficult to validate the use of an interpreter in interview-based studies. Two of the taperecorded texts from the interviews were checked by a second interpreter. She found one question that was influenced by the first interpreter's personal opinion. The rest of the new versions of translation came out quite similar to the first version. On the other hand, the validity of the results was probably increased by the fact that the female interpreter had been informed beforehand about nature of the

study and its topics and, in contrast to other studies, women who could not communicate in Swedish were *not* excluded.

In order to increase their validity, the preliminary results of the study were discussed with several of the Somali women.

The text analysis was performed by a multidisciplinary research team. Important topics from the text were coded and the following themes were generated: *a) pregnancy and delivery experience, b) nutrition habits, c) social network, and d) FGM/C.*

### ***Article III***

The study is a medical-record-based perinatal audit covering 189 perinatal deaths in Sweden from 1990-1996. It represents the full cohort of ES pregnant women and a stratified sample of native-born Swedish women who delivered in Swedish hospitals during this period. From the Swedish Medical Birth Registry, all 63 perinatal deaths to women originating from Ethiopia or Somalia (ES) were identified. For each infant mortality to an ES mother, two cases of perinatal death of infants to Swedish women at the same hospital were matched by time of death (ante-, intra- or postpartum).

Narratives based on individual medical records were written for each birth. They contained in-depth descriptions of relevant time-related events, including medical history, social conditions, communication, surveillance, interventions, and outcome.

#### **Audit Procedure**

An expert panel of 3 obstetricians and a neonatologist was convened to review the 175 cases. The panel worked with case narratives to identify sub-optimal

factors likely to have contributed to perinatal death. The role of the audit panel members was to identify those situations that were critical and required action. If the required action was not covered by the objective criteria that were formulated beforehand, it was up to the personal judgement of the panel member to assess the adequacy of action taken and to comment on the level of “sub-optimality”.

Figure 3 presents the primary criteria (explicit and primarily evidence-based) for identifying sub-optimal factors. They were adopted mainly from the EuroNatal study of perinatal mortality in Europe (49). A mother with a suspected IUGR foetus, not reporting foetal movements within 24 hours (Figure 3b) was not an evidence-based criterion; however, it is a common clinical practice recommended in Sweden. Foetal movement is one of the ultra-sound signs of the biophysical profile for an infant’s well-being (50).

The secondary sub-optimal factors identified during the audit and defined by clinical consensus were categorised as implicit criteria (Figure 4). Some of these criteria (Figure 4a, b, c) originated from the hypothesis generated in Study II. All sub-optimal factors were assigned to one of 3 categories:

1. *maternal factors* (which the mother did not realise were detrimental);
2. *medical care factors*;
3. *communication* (infrastructure).

- Primary and explicit criteria**
- a) Smoking during pregnancy, SGA and/or placental abruption (49),(51)
  - b) Suspect IUGR and absence of foetal movement not reported by mother (49)
  - c) Undetected IUGR after 32 weeks of gestation, even after examination with symfys-fundus or ultrasound measurement, or absence of measurement (49),(52)
  - d) Health care providers not intervening or referring case to higher level of care despite having observed abnormal measurement in combination with SGA infant (49),(52)

**Figure 3.** Explicit criteria for sub-optimal care likely to have contributed to fatal outcome

- Secondary and implicit criteria**
- a) Mother has failed to adhere to care routines, did not cooperate in intensive surveillance, or avoided intervention
  - b) Mother prolonged need for urgent care, while experiencing grave symptoms, such as haemorrhage or abdominal pain
  - c) Interpersonal miscommunication, independently ethnic background, or absence of interpreter
  - d) Intervention not made in a timely manner, failure to react appropriately to CTG signs of severe foetal distress during labour (52)
  - e) Midwife did not call for medical assistant in appropriate time when foetus/infant shown to be unstable or late transferral of unstable infant
  - f) Inadequately medication, or failure to give terbutaline, cortisone or surfactant
  - g) Inadequate neonatal surveillance
  - h) Failure to detect possible operable malformation in unstable infant. End-of-life decision not stated (49)

**Figure 4.** Implicit criteria for sub-optimal care likely to have contributed to fatal outcome



For purposes of categorising perinatal deaths to ascertain which were potentially avoidable, we used a modified version of the Nordic-Baltic perinatal death classification scheme (53). The choice of classification system was based on the clinical experience that probably in only few cases of infant deaths to immigrant women was a post-mortem examination performed. Earlier classifications were based mainly on a single clinical-pathological cause of death, and did not always include potential avoidability as part of the classification (54),(55). As the two cohorts were matched for time of death in relation to delivery, the cause of death classification was later used only to decrease the likelihood of selection bias. The original version of the Nordic-Baltic perinatal death classification is presented in Table 6. In the present study, categories IV and VI were excluded, as they did not include perinatal deaths in Sweden. Due to the low number of cases, categories III & V and VIII & XI were combined. No cases were left unclassified (XIII), nor were there intrapartum deaths <28 weeks of gestation (VII). According to this system, all cases involving foetal malformation were assigned to a common category regardless of time of death, since they are almost always unavoidable. The remaining cases were grouped in mutually exclusive categories, based upon four variables:

- 1) time of death in relation to delivery (antenatal, intrapartum, and neonatal)
- 2) small for gestational age (SGA with birth weight < mean - 2SD) (56)
- 3) gestational age (<28, 28-33, or >33 weeks)
- 4) neonatal distress (AS, Apgar score <7 at 5 min)

**Table 6.** The original Nordic-Baltic classification of perinatal death

Categories	
I	Foetal malformation
II	Antenatal death, single, SGA $\geq 28$ wks
III	Antenatal death, single, $\geq 28$ wks
IV	Antenatal death $< 28$ wks
V	Antenatal death, multiple pregnancy
VI	Intrapartum death $> 28$ wks
VII	Intrapartum death $< 28$ wks
VIII	Neonatal death $\geq 28-33$ wks AS 5' $> 6$
IX	Neonatal death $\geq 28-33$ wks AS 5' $< 7$
X	Neonatal death $> 33$ wks AS 5' $> 6$
XI	Neonatal death $> 33$ wks AS 5' $< 7$
XII	Neonatal death $< 28$ wks
XIII	Unclassified

A large proportion of SGA-antenatal deaths, intrapartum deaths, and neonatal deaths of infants  $> 33$  weeks were considered potentially avoidable by improved care (57). A difference was considered statistically significant if  $p < 0.05$ . The relative risk was estimated by means of OR, applying 95% CI. A multivariate analysis was performed by means of conditional logistic regression, where variables were selected on the basis of the univariate analysis of risk factors (SGA-infant and maternal diseases such as; diabetes, HIV-infection, cardiac disease).

### *Article IV*

In this study, all women of ES origin who experienced a perinatal death in Sweden from 1990 to 1996 ( $n=63$ ) were identified from the Swedish Medical Birth Registry. The goal of this study was to determine if ES cases of

perinatal death were considered linked to any complication due to genital circumcision. Audit data was derived from the medical records by the same methodological procedure cited in Article III. Narratives based on individual records were written for each birth. They contained in-depth descriptions of relevant time-related events, including such elements as medical history, social conditions, communication, surveillance, interventions, and outcome. The narratives limited themselves solely to data obtained from the records, noting if pertinent information was missing. All of the ES women were described as genitally cut. The exact form of vulva trauma was not always given in detail, but the most common form of genital cutting among girls from Africa's Horn is infibulation, which is known to be the most extensive form of cutting (39).

### *Article V*

Eighty-three nulliparae singleton circumcised women who had delivered at the University Hospital MAS, Malmö, Sweden, during 1990-1996 were compared to a full two-year cohort of 2779 non-circumcised nulliparae women giving birth at the same hospital during 1995-96. Information about pregnancy, delivery, and the neonatal period was available from the perinatal database at the Department of Obstetrics and Gynaecology. The medical records of all women of ES origin were scrutinised for genital status in the way mentioned in Article IV.

The second stage of labour was defined as the period from complete cervical dilatation to delivery. Prolongation of labour was defined as the second stage of labour exceeding 60 minutes. The Mann-Whitney test was used to compare differences of continuous data, skewed (unequal) distributed between the groups. The relative risk of prolonged labour was estimated by means of OR,

applying a 95% CI. A multivariate analysis was performed by means of logistic regression. Prolonged labour was used as the dependant outcome variable with, maternal age, epidural anaesthesia, and birth weight deviation (birth weight minus expected weight for gestational age, divided by expected birth weight, expressed as a percentage) (56) as independent variables.

# AIMS, MAIN RESULTS, AND COMMENTS

A summary of the results of the thesis is presented in the table below.

Table 7. Outcome and major findings of the studies

Article	Outcome	Major findings
I	Perinatal morbidity and mortality	Increased PNM among infants to women of foreign origin, particularly those from SSA; had a higher risk of PNM and SGA, but a lower frequency of transferral to NICU.
II	Pregnancy strategies and attitudes	Hypothesis: Somali women have different pregnancy strategies, reduced psychosocial resources and suffer of communication difficulties in Sweden, which might increase the risk of PNM. They did not express a correlation between FGM/C and a history of obstetric problems.
III	Potentially avoidable perinatal deaths	Perinatal dead infants to ES women had a higher risk of sub-optimal care due to inadequate maternal strategies, insufficient medical attention, and miscommunication, as compared to infants to Swedish mothers.
IV	PNM and FGM/C	No association found between FGM/C and PNM.
V	Duration of labour and FGM/C	No association found between FGM/C and prolonged labour. A shorter second stage of labour noted among FGM/C women.

## *Are foreign-born women and their infants at increased obstetric risk in Sweden? (Article I)*

The aim was to investigate how the maternal country of origin affected the risk of perinatal mortality, both before and after adjustment for perinatal risk factors.

A total of 133 countries of maternal origin were identified, but due to a low number of immigrants from some of these, the entire foreign population was subsumed under the category "Foreign origin".

Women of "Foreign origin" differed from women of Swedish origin in being more often multiparous, of short stature, non-smokers, and by not cohabiting in early pregnancy. Diabetes and anaemia were more prevalent among women of "Foreign origin", but no differences were seen between the two groups regarding severe anomalies, preterm delivery, neonatal distress, or SGA. Pre-eclampsia was less frequent as compared to Swedish women. The correct frequency of neonatal acidosis was 8.7% in the group of Swedish origin (n=729/8378), whereas 7.3% of all infants of foreign-born women (n=275/3782), and 3.6% (n=10/278) of all infants to SSA mothers had acidosis (Errata Article I). Perinatal mortality was 0.60% among Swedish women and 0.91% among women of "Foreign origin".

### **The sub-Saharan African group**

The SSA group differed from all other immigrants, in showing a higher prevalence of neonatal distress, pre-term delivery, and SGA; but a smaller proportion of infants born to women of the SSA group needed to be

transferred to the NICU. Among all women of “Foreign origin”, the SSA group had the highest risk of PNM (OR 4.3, CI 2.1-8.6). When SSA women were excluded from the group of “Foreign origin” there was still a tendency towards a higher risk of PNM, although this was not statistically significant (OR 1.3, CI 0.8-1.8).

In order to adjust for potentially confounding effects and to identify independent risk factors that could explain why women of “Foreign origin” had a higher PNM, a multiple logistic regression analysis was made. In the first model, background factors were entered as covariates, but this did not change the increased PNM (Table 8). In the second model, when risk factors for PNM were added, the increased PNM risk for women of “Foreign origin” was still statistically significant. The same pattern was shown among SSA women.

**Table 8.** Crude and adjusted relative risk regarding perinatal mortality among women of Swedish and Foreign origin, (n = 15,639)

Factors	Crude OR (95% CI) Perinatal Mortality	Adjusted OR (95% CI)	
		Model 1	Model 2
<b>Foreign origin<sup>a</sup></b>	1.5 (1.0-2.2)	1.5 (1.1-2.3)	1.5 (1.0-2.2)
<b>Maternal age (y)</b>			
19-40		1.0 (reference)	
< 19		2.7 (0.8-9.0)	
> 40		0.6 (0.1-4.4)	
<b>Parity</b>			
1-4		1.0 (reference)	
0		0.8 (0.5-1.2)	
> 4		0.6 (0.1-4.3)	
<b>Maternal height<sup>b</sup></b>		0.8 (0.3-1.8)	
<b>Smoking<sup>c</sup></b>		0.7 (0.4-1.2)	
<b>Cohabiting<sup>d</sup></b>		1.9 (1.1-3.3)	
<b>Diabetes<sup>c</sup></b>			6.4 (2.2-18.5)
<b>Anaemia<sup>c</sup></b>			1.5 (0.6-3.5)
<b>Pre-eclampsia<sup>c</sup></b>			0.8 (0.3-1.8)
<b>SGA<sup>c</sup></b>			25.4 (15.7-412)
<b>Placental abruption<sup>c</sup></b>			34.0 (11.5-100.4)

<sup>a</sup>Foreign versus Swedish origin, <sup>b</sup>≤ 1.55 m versus > 1.55m, <sup>c</sup>yes versus no, <sup>d</sup>no versus yes

## Comments

The elevated PNM among children born to women of SSA origin did not appear to be explained by most of the commonly cited risk factors during pregnancy and delivery, such as diabetes, anaemia, placental abruption, pre-eclampsia, and SGA. The results of the study initiated question for further research. Earlier reports from Somalia have described an eating pattern common among pregnant women: in order to avoid a large foetus and a complicated delivery, women may voluntarily eat less during pregnancy (58),(59). To further explore these subjects and to illustrate the potential impact



a poor knowledge of Swedish may have among pregnant immigrants, we chose the anthropological approach in Article II.

PNM is said to be a proxy of the efficacy of health service, while infant mortality is claimed to be an indicator of parents' socio-economic status (60). The results of this study gave us the idea of analysing PNM on a case-by-case basis with regard to the standards of care in Sweden (Article III). A perinatal audit procedure was chosen to search for further explanations of the observed ethnic differences in PNM.

The majority of women in the SSA group were born in Somalia, where nearly 100% of the women undergo some sort of genital cutting (39). To our knowledge, there only are a few studies in French or English exploring the association between FGM/C and PNM (42),(61),(41),(32),(30),(37). Some studies indicate no association at all, and others claim that scar tissue in the birth canal will provoke prolonged and obstructed labour and may subsequently lead to PNM. As far as we know, no study has yet been undertaken to investigate this issue in the case of women who have migrated from low- to high-resource countries. These were the reasons behind the studies in Article IV and V.

*Are there attitudes and pregnancy strategies of Somali immigrant women that might affect perinatal outcomes?  
(Article II)*

The aim of this study was to explore culturally and socially determined habits, strategies, and attitudes of immigrant Somali women towards pregnancy and childbirth in Somalia as well as in Sweden, in order to gain an

understanding of how such factors affect perinatal outcome from an integrated perspective.

The interviews yielded information on how Somali women perceived their pregnancies and delivery experiences. Insight was also obtained on their predelivery nutrition habits in Somalia and Sweden. The informants also related their experiences of female circumcision and of being pregnant, and how their social network changed when they emigrated to Sweden. In the following, it is exemplified by quotes from different informants.

### **Pregnancy experiences**

A majority of the women interviewed expressed satisfaction with the routine ANC provided in Sweden. However, only a few women could recall specific instructions regarding perinatal surveillance and precautions from midwives or obstetricians. *“I do not remember them telling me anything useful. I do not really understand why I had to go see a midwife and have a blood test. I think you are nice here in Sweden, but I want to know why I have to be checked!”*

Severe nausea and vomiting were common pregnancy experiences of several women, both in Somalia and Sweden. Some women said that this nausea was more intense in Sweden, requiring more hospital care than in Somalia. They could not state any reason for this difference.

### **Nutrition habits**

Many of the women believed that if they ate too much, their baby would grow very large and that this would increase the risk of C/S, so they had to restrict their dietary intake during pregnancy. *“During pregnancy I ate very little. I was afraid of great a rupture or being delivered by caesarean section.”*

### **Delivery experiences**

Many of the women relayed fear regarding risks inherent in delivery, and some expressed the feeling that labour was a condition somewhere between life and death. *“The only thing I thought about delivery was fear of dying. I remember my pregnancy in Somalia. I had dinner with a pregnant friend of mine: Suddenly she started to feel labour pains and went to the hospital. She and the baby died that day”*. Women expressed fear of having a caesarean because it would limit the number of children they could have, and because of their anxiety of dying during the procedure. *“Caesarean section— it is a nightmare. I know women who did not survive. If you survive, it gives you other problems. You can not get pregnant until two or three years after.”*

### **FGM/C**

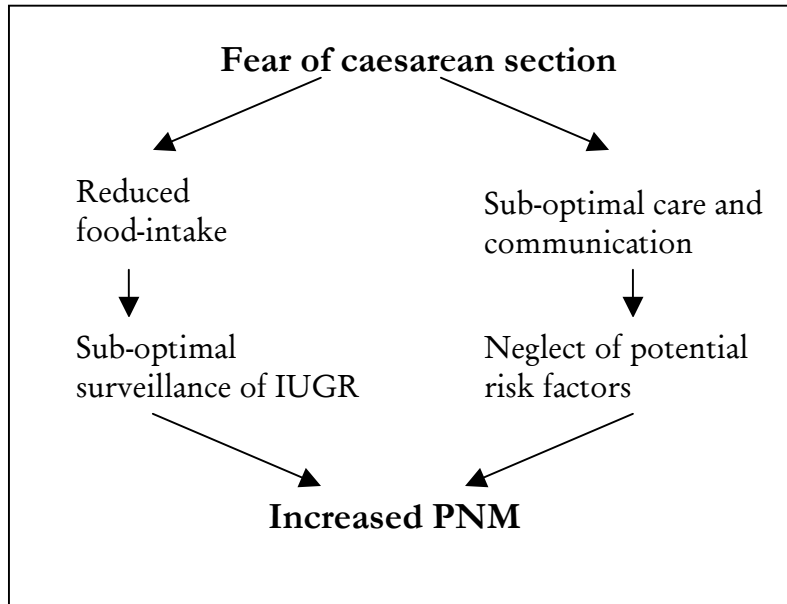
None of the women spontaneously discussed any association between circumcision and a bad obstetric outcome. There were women who commented critically on their feelings of a lack of emotional support and fears that midwives have insufficient knowledge in handling genitally mutilated women. *“In our homeland, it is so common with circumcision— all women are circumcised, so no one thinks that anything will happen. When we came to Sweden, we met people who said that female circumcision causes risks during childbirth, but we don’t think so much about it.”*

### **Social network**

Nearly all women identified differences between motherhood in Sweden and Somalia. In Somalia, the family tends the women during pregnancy until the first forty days after delivery. In Sweden, however, the mothers described feelings of loneliness and isolation. *“My husband helped me, but he can’t help me in the way my own parents or my mother-in-law could. Here in Sweden I only have my husband, and I have to do everything by myself”*.

## Comments

Somali women have different practices, strategies, and attitudes regarding pregnancy and childbirth. These strategies should be seen as survival behaviours related to their background in an environment with a high maternal mortality (24). These women consider a safe delivery to be a normal vaginal delivery, and thus they reduce food intake to limit the growth of the foetus and thereby avoid caesarean section (C/S) and maternal mortality. Some of their statements probably reflect misunderstandings between caregivers and patients due to a lack of interpreters. The hypothesis presented here is that there is a relationship between the attitudes and strategies during pregnancy and childbirth, and the adverse outcomes, in the case of Somali mothers and their infants in Sweden (Figure 5).



**Figure 5.** Relationship between risk orientation, pregnancy strategies, and PNM. (Derived from in-depth anthropological interview study of Somali immigrant women in Sweden).

*Was there a difference in the standard of perinatal care between women from Africa's Horn and Sweden with regard to perinatal mortality in Sweden? (Article III)*

The aim of the study was to identify sub-optimal factors which were likely to have contributed to PNM among women of ES and Swedish background, as well as to identify which part of the Swedish perinatal care program could be improved.

Sub-optimal factors likely to have contributed to potentially avoidable perinatal deaths are shown in Table 9. They are divided into the *categories of maternal, medical care, or miscommunication factors*. All categories of such factors were more common among the ES group, except foetal death caused by placenta abruption among smoking mothers and undetected IUGR. The odds of sub-optimal factors were higher in the ES group compared to the Swedish group in all three strata of time of death in relation to delivery.

**Table 9.** Criteria for sub-optimal factors<sup>a</sup> likely to have contributed to PNM of children to women of ES, versus women of Swedish origin

Categories of sub-optimal factors	ES origin (n = 62)	Swedish origin (n = 113)
<b>Maternal factors</b>		
IUGR/absence of foetal movement not reported by mother	7	0
Placental abruption, smoking, and/or SGA	0	10
Delay in contacting health care when needed or non-participation in clinical routines	9	0
Mother avoiding emergency caesarean section	6	0
<b>Medical care factors</b>		
Insufficient foetal surveillance of suspected IUGR	4	2
Undetected IUGR after 32 wks and SGA	1	3
Inadequately given medication to mother or premature infant	10	6
Misinterpretation of CTG	6	1
Late arrival of paediatrician or late transferral of unstable infant to NICU	4	3
Failure to detect operable malformation in unstable infant	1	1
<b>Communication</b>		
Verbal miscommunication between patient and caregiver	5	0

<sup>a</sup>Some case could fall within more than one category

Table 10 shows the distribution of perinatal dead infants among ES and Swedish women in the cohort of this study, in comparison with the distribution of perinatal deaths in the full national birth cohort in Sweden in 1991—using the Nordic-Baltic perinatal death classification scheme (53). No major differences in the pattern of perinatal death were found between our stratified sample of Swedish women, and the full national cohort of Swedish

women giving birth in 1991. A higher proportion of the total group of dead infants to ES women than the total group of perinatal deaths (1991) was found in categories of SGA stillbirth, intrapartum deaths and neonatal deaths  $\geq 33$  weeks. These categories have been considered potentially avoidable by earlier studies (57).

**Table 10.** Perinatal deaths, following the Nordic-Baltic classification, of children born to mothers from ES<sup>a</sup>, and to women of Swedish origin, 1990-96<sup>b</sup>, versus the total<sup>c</sup> of perinatal deaths in Sweden, 1991

Categories of perinatal death		<sup>a</sup> Perinatal deaths in ES group (n=62) %	<sup>b</sup> Perinatal deaths in Swedish group (n=113) %	<sup>c</sup> Perinatal deaths in Sweden, 1991 (n=780) %
I	Malformation	6 (10)	22 (19)	179 (23)
II	Stillbirth, SGA >28 wks	16 (26)	11 (10)	90 (12)
III-V	Stillbirth, unexplained and multiple pregnancy	19 (31)	54 (48)	293 (37)
VI	Intrapartum death	8 (13)	8 (7)	23 (3)
VIII-XI	Neonatal death >28 wks	10 (16)	6 (5)	81 (11)
XII	Neonatal death $\leq 28$ wks	3 (4)	12 (11)	114 (14)

<sup>a</sup>Total cohort, <sup>b</sup>Stratified sample of a total cohort

## Comments

Perinatal deaths related to *maternal pregnancy strategies* were found to be more common among ES women. ES mothers did not always participate in routines of IUGR surveillance. Absences of foetal movements were reported by 12% of the ES women with SGA infants, as compared to 71% of the Swedish women. These results may illustrate a different risk orientation among Somali women as hypothesised in Article II.

According to the findings of this third study, it appears that some intrapartal and neonatal deaths among children born to ES mothers could have been avoided if an interpreter had been present during emergency situations. Furthermore, certain cases might also have had a positive outcome if the frightened mother had understood why a C/S was imperative, and if the obstetrician had foreknowledge of the woman's reasons for refusing the intervention. It would appear that Swedish perinatal care services do not presently meet the communication needs required by a multiethnic population, as mentioned in a hypothesis to Article II. Providing patient education during pregnancy might greatly reduce misconceptions during labour.

PNM among the ES group was more often related to sub-optimal medical care. There was a higher rate of inadequate CTG interpretation by the midwife or obstetrician, or late arrival of the paediatrician when an unstable infant was being delivered. The results also suggested more frequent late transferral to NICU of the ES newborns, or inadequate medication given to the mother or the premature infant (terbutaline, cortisone, or surfactant) in the ES group. In addition, newborns to ES women were less frequently transferred to NICU than newborns to Swedish women (Article I). Health care personnel might thus be less skilled in observing mothers of ES origin and their infants, resulting in less active and belated management.

The perinatal audit has its limitations. Theoretically, dependent misclassification might have occurred by using information taken from hospital medical records which were completed after a fatal outcome was



known. Care providers who were aware of such an outcome were involved in supplying some of the written information. This knowledge could have biased the provider to focus on sub-optimal maternal, rather than inadequate medical care factors, resulting in an overestimation of the importance of such factors for potentially avoidable perinatal death. In addition, despite attempts to maintain a blind cohort for the audit, certain information in the narratives may have indirectly disclosed the ethnic affiliation of some cases under review to the expert panel, as when mention of severe communication problems or smoking habits were cited in the medical record. The case narratives were written by only one person (BE) due to economic and practical reasons. No validation was made of the case narratives, which is a limitation. Theoretically, it increases the risk of systematic errors and the influence of personal opinions, although BE has earlier experiences of writing case narratives for perinatal audits. There is also a risk that the audit result could reflect idiosyncrasies of the auditors (62),(63). Primary explicit criteria for sub-optimal factors were designed in advance and secondary criteria were discussed thoroughly prior to consensus in order to reduce this risk.

### *Is there an association between FGM/C and PNM? (Article IV)*

The aim was to investigate whether female genital mutilation, circumcision, or cutting (FGM/C) was related to increased PNM among infants of women native to Ethiopia or Somalia giving birth in Sweden.

The present study found no association between FGM/C and PNM. We did not find that obstructed labour was an important causal component of the perinatal deaths investigated (Table 11).

**Table 11.** Summary of perinatal audit of 63 perinatally dead infants to genitally circumcised mothers

Number of death (n)	Reason for PNM	Comments	FGM/C related to PNM
<b>Antenatal (39)</b>			
39	Stillbirth	Malformation or IUGR	Not likely
<b>Intrapartal (8)</b>			
4	Placental abruption and foetal distress	2 mothers avoiding C/S, 1 misinterpretation of CTG	Not likely
4	Foetal distress	1 mother avoiding C/S, 2 misinterpretations of CTG	Not likely
<b>Neonatal (16)</b>			
4	Severe malformation		Not likely
1	Sudden death		Not likely
3	IRDS, prematurity		Not likely
1	IRDS , sepsis		Not likely
2	IRDS , neonatal distress	2 mothers avoiding C/S	Not likely
5	Neonatal distress	1 mother avoiding C/S, 3 misinterpretations of CTG	Not likely

Cases of *antenatal death* were obviously not considered to be related to FGM/C. Among *intrapartal deaths*, 5 cases of placental abruption and 3 with foetal distress were observed. However, none of the eight intrapartal deaths were related to obstructed labour due to FGM/C. By audit of the *neonatal* deaths, there was one case of primigravida with prolonged *first* stage of labour (25 hours), but foetal heart monitoring with CTG in retrospect showed signs of severe foetal distress over the course of 3 hours without appropriate action being taken in time.

## Comments

None of the PNM to the FGM/C women was considered to be related to any complication caused by the fact that the mother was genitally cut in her youth. FGM/C, which might result in some scarring of the external genital organs did not therefore seem to cause any obstruction during labour. The result of the present investigation is in contrast with earlier studies (32),(30). The previous conclusion—that FGM/C is related to PNM—might warrant modification, since such does not seem to be the case in an affluent society such as Sweden, with its high standard of perinatal care. The present results might be helpful in directing attention to other factors contributing to PNM among circumcised women. These new findings could also prove useful when developing prevention programs regarding circumcision in Sweden.

### *Is there an association between FGM/C and prolonged labour? (Article V)*

The aim of the study was to investigate whether the duration of labour tends to be longer among circumcised women giving birth in a community with high standards of obstetric care. The duration of the second stage of labour among non-circumcised women was 53 minutes but was 34 minutes among circumcised women. The estimated OR for prolonged labour was lower among circumcised versus non-circumcised women by a statistically significant amount, both in crude measurements, and after adjustments (Table 12). Adjustment for epidural anaesthesia, birth weight deviation, and age did not represent a statistically significant change in the risk for prolonged labour.

**Table 12.** Crude and adjusted relative risk regarding prolonged labour among circumcised (n=68) and non-circumcised nulliparae women (n=2,418), giving birth in Sweden

Variables	Crude OR (95% CI)		Adjusted OR (95% CI)	
	Prolonged labour		Prolonged labour	
Circumcised vs. non-circumcised	0.3	(0.2-0.5)	0.3	(0.2-0.6)
Maternal age <sup>a</sup>			1.2	(1.0-1.4)
Birth weight deviation <sup>b</sup>			1.2	(1.1-1.3)
Epidural anaesthesia			2.0	(1.5-2.7)

<sup>a</sup>OR for age is presented as a 10 years period, <sup>b</sup>OR presented as 10% of differences in weight deviation

### Comments

Our results agree with what those recently announced by the WHO. No documented evidence has been found to confirm the relation between obstructed labour and FGM/C, since the elasticity of the birth canal is not affected (38). It seems unlikely that the external genital scar caused by circumcision is too tough to be torn by uterine contractions, as the frequency of both prolonged labour and instrumental vaginal delivery was not found to be higher among circumcised women.

These findings should not be taken as a reason to abstain from criticising the practice of circumcision; nor as some kind of surreptitious conservative agenda; on the contrary, they should help focus attention on the right issues. The majority of circumcised women throughout the world will give birth in an environment where the consequences of FGM/C may be totally different. It may be difficult to obtain valid data on the outcome of such deliveries in low-income countries who have poor access to obstetric care. Nevertheless, previous conclusions that circumcision is related to prolonged labour might have to be modified, since this does not appear to be the case in affluent

societies with a high standard of obstetric care, especially where routines have been established for handling circumcised women.

## GENERAL DISCUSSION

### *Perinatal mortality among immigrants from Africa's Horn*

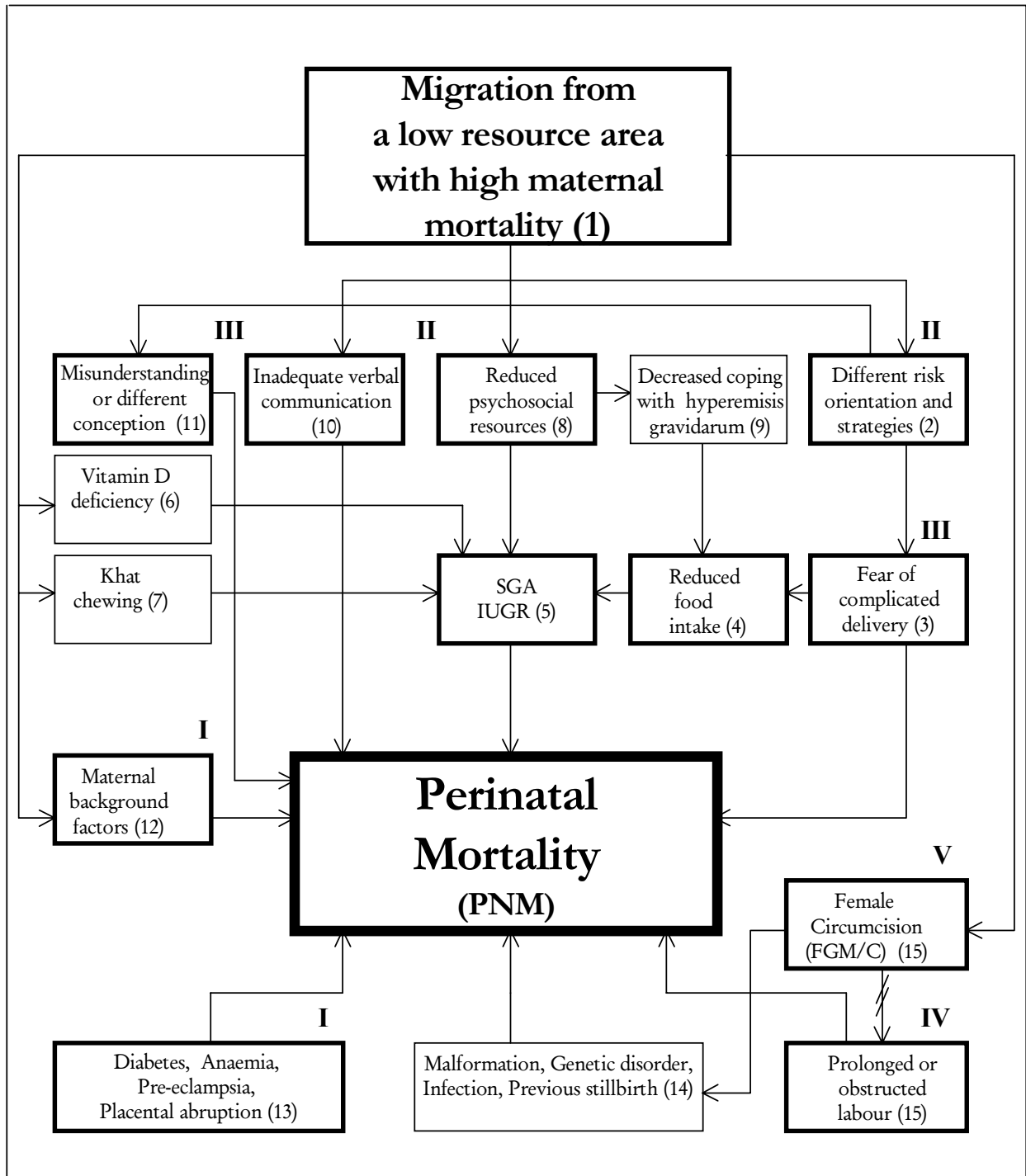
The exploration of PNM among immigrants with the number of methodologies employed in the present investigation has not, to the best knowledge of the writer, been used before in the area of obstetrics and gynaecology. It is hoped that the combination of quantitative and qualitative data has enriched the results and enhanced the understanding of PNM among SSA immigrants in Sweden. The use of the perinatal audit has recently been shown by the Cochrane Systematic Reviews to be effective in decreasing the risk of PNM by improving the practice of health care providers (46). A further departure in this thesis is the engagement of multidisciplinary co-operation to widen the methodological approaches and discussions.

However, the thesis has several limitations. PNM is still a rare outcome in Sweden and the causal mechanisms between PNM and its risk factors are complex. In general, it could be disputed whether the population of ES women in Sweden are representative of others of their ethnic background. Theoretically, the immigrant women in this study might represent a selected group with regard to reproductive health and chronic complications. In order to immigrate to Sweden from the poorest, most underprivileged part of Africa, a woman has to be relatively healthy. These immigrants might thus be less representative of the general SSA population than immigrant groups from higher socio-economic areas. For instance, the negative correlation between FGM/C and prolonged labour in Article V could be due to a positively-selected group of FGM/C women with fewer long-time complications. It has obviously not been possible to compare circumcised women of ES origin with

non-circumcised women from the same countries of origin. However, no evidence was found suggesting that ethnic background per se should be an independent risk factor for prolonged labour (64),(65).

Research based on statistical registers has its limitations in a population with people of different countries of origin. There is a lack of information in national and local registers in Sweden about socio-economic variables such as educational level, living conditions, employment status, income, and occupation among immigrants, all of which may influence perinatal outcomes (Articles I, V).

The following figure illustrates the theoretical causation of PNM, including the importance of experience, rationality, and tradition for risk assessment in pregnancy and childbirth among immigrants from Africa's Horn. The dark boxes represent what has been studied; the hypotheses that remain to be tested are in light boxes. They are discussed in the text in subsequent paragraphs referred to by numbers in parentheses.



**Figure 6.** Theoretical model illustrating the causation between medical and socio-cultural factors on PNM among immigrants from Africa's Horn. Dark boxes represent what has been investigated; hypotheses that remain to be tested are in light boxes. Arabic numbers refer to the text paragraphs in the "General Discussion". Roman numerals refer to original articles (Essén B et Johnsdotter S, 2001).



1) Inequalities of resources for reproductive care generate the immense global problem of maternal mortality. A woman's risk of dying each time she becomes pregnant in Somalia is about 1:60. By contrast, in Sweden the risk is 1:14,000 (20). The high rate of maternal mortality is compounded by the high pregnancy rate. If a woman gets pregnant six times, her lifetime risk of dying is 1:10 in Somalia. If a Swedish woman gets pregnant twice, her lifetime risk of dying is 1:7,000. As a result, a Somali woman's different risk orientation and pregnancy strategies are considered more in terms of their social background than as different cultural behaviours.

2) An example of different risk orientation is shown in Article II. The women interviewed all had a strong, pragmatic religious faith. Few of them admitted to any fear for their child's health (sudden infant death, for example), a fear that is common among Swedish women. Although they put forth their best effort to care for their children, if a child were to die, they saw it as a predetermined act of God. The fact that Somali women do not talk about their anxieties may have been interpreted as their having a different risk orientation. If the Swedish perinatal care system is unaware of this, certain potential risk factors may be neglected or misunderstood, thereby contributing to adverse perinatal outcomes. Improving obstetric care is more complicated than simply offering good medical services; one must also take into account the social and cultural way of life of the women concerned if one is to achieve a successful perinatal outcome (66).

3) The results from Articles II and III also reveal that the women studied avoided C/S, a widespread pregnancy strategy among ES women, which is based on fear of complicated delivery. Elevated intrapartum (perinatal)

mortality may be associated with a low rate of interventions during delivery. National figures show that ES immigrants run the highest risk of C/S in Sweden (25), but all of the ES cases in this study were emergency C/S. Thus, C/S seems to have always been performed too late. This is supported by the finding that ES mothers have often either refused or delayed emergency C/S, even when experiencing such severe symptoms as vaginal haemorrhage or the threat of foetal asphyxia (by CTG). Fear of such complications or even maternal death may cause this group of immigrant women to avoid seeking medical care, or to refuse interventions potentially involving C/S. Their apprehensiveness seems to be primarily grounded in their knowledge of the situation prevailing in their countries of origin, where there is a high risk of maternal mortality. The notion among these ES women seems to be that C/S causes death, rather than understanding the procedure as an attempt to avoid a fatal outcome. An interview-based study of Somali women who migrated to the USA showed that they preferred to be delivered by obstetricians who were “conservative” regarding recourse to performing C/S (67). Press et al. made a retrospective case control study between Ethiopian and non-Ethiopian Jewish women giving birth in Israel (61). A higher percentage of intrapartal deaths were found in the Ethiopian group of PNM, but the study did not further discuss the mechanism of the observed differences, nor did it mention whether the women were circumcised.

4) The nutrition strategy of reducing food intake in an attempt to occasion an easier delivery could in one way be seen as a rational practice in the Africa's Horn, bearing in mind the enormous risk of maternal mortality. While debatable if this strategy is effective in its Somali environment, it is highly inappropriate in a high-resource country such as Sweden. Previous studies

from Somalia have described the same traditional practice of employing limited food intake during pregnancy in order to prevent the foetus from gaining too much weight, so it can pass the birth canal in a normal way (58),(59). The present thesis confirms the fact that such a practice continues even after emigration to a country with very advanced obstetric care such as Sweden, and that the Swedish perinatal care service has not taken cognisance of this particular tradition among immigrant groups from Africa's Horn. Quality of care may thus differ if different expectations of the care process exist between immigrants and caregivers.

The literature describes the practice of reduced food intake in the third trimester of pregnancy as due to fear of difficult labour—*primarily because of inelastic scar tissue resulting from procedures of FGM/C* (59),(34). However, we found no support for this in the present study (Article II). Research conducted in India, where FGM/C is not practised, has shown the same phenomena of reducing food intake to avoid complicated deliveries such as C/S (68).<sup>1</sup>

---

<sup>1</sup> While presenting the results from Article II regarding the phenomenon of voluntary reduced food intake, a discussion took place between physicians, midwives, and Somali-speaking groups in Sweden. The research team first described the aforementioned nutrition habits as “self-starvation”. When some of the respondents objected, a euphemism was suggested, and the expression “voluntary reduced food intake” was introduced instead. The expression “self-starvation” was not intended to refer to anorexia nervosa. *Not all women of Somali origin reduce food intake during pregnancy, nor are they all aware of the practice.* The validity of the results from a qualitative investigation should be generalised to include the background population in terms of the existence of a certain phenomenon, but to a lesser degree with regard to quantitative aspects (See A. Kuzel, *Doing qualitative research*. London: Sage; 1992).

5) The effect of diet on SGA seems to be complex. Extremely low caloric intake which results in low birth weight is still a problem in low-income countries (69). However, iatrogenic caloric restriction during pregnancy in a high-income country does not seem to affect birth weight (70),(71),(72). Few studies have been conducted on caloric restriction and its association with SGA and PNM in women who have migrated from low to high-income countries.

Although it has been questioned recently (73), SGA could be seen as proxy for the risk of IUGR (intrauterine growth restriction) (74). SGA is associated with PNM (75), but it is a statistical measurement while IUGR expresses pathology. The higher prevalence of SGA among infants born to SSA women (see Articles I, III, IV and V) might be an inflated figure, as the intrauterine growth curve is based on a Swedish population (56),(76). Part of the explanation of low birth weight might lie in the characteristics of the mother's own intrauterine and childhood environment, which may have interfered to curtail their own optimal growth and development, and later resulted in an adverse perinatal outcome (77),(78),(79). In a multi-ethnic population, better tools are needed to be able to distinguish between genetic, placental circulatory, or environmental mechanisms regarding IUGR (80).

6) Vitamin D deficiency might be associated with the increased risk to SGA infants (81),(82),(83),(84). The intended pathway is the decreased placental transport of calcium to the foetus, with foetal bone growth being related to the amount of calcium in its bone mass (85). The combination of a) dietary inadequacy (reduced food intake, less intake of dairy products), and b) lack of exposure to sunlight (fewer hours of daylight in Sweden and the tradition of

wearing clothes to cover the whole body), c) short intervals between pregnancies could increase the risk of vitamin D deficiency among immigrants.

7) Chewing the amphetamine-like stimulant khat (*catha edulis*) is widespread in East Africa. In some places it is also used by women during pregnancy, and has been reported to be associated with low birth weight (86),(87). A study from Ethiopia showed that one reason for chewing khat was to avoid gaining weight (88). Khat has also been found to have embryotoxic and teratogenic properties (89),(90). Of the total number of perinatal deaths in Sweden in a given year, 62% were stillborn (Swedish Medical Birth Registry, 1995). In the SSA group in Article I, 66% infants were stillborn. However, little is known about this practice of chewing khat among pregnant women from Africa's Horn who now live in Sweden.

8) Reduced psychosocial resources subsequent to the migration process might be of greater significance among immigrants from *low-income countries* who went on to high-income countries, than for immigrants from high-income countries. It may explain why SSA women comprised the immigrant group with the highest risk of adverse perinatal outcome. Article I shows that SSA women had the highest frequency among all immigrants of living apart from the father of their child during pregnancy. Based on the comments of women in Article II, Somali women in Sweden experience a broken social network, in contrast to Somalia, where a female social network immediately begins taking care of all traditional female roles in the home of the pregnant woman (58). The absence kind of this support, that is, low psychosocial resources as an

immigrant in Sweden, is a known pregnancy risk factor for giving birth to a SGA infant (91).

9) Hyperemesis gravidarum has been found by clinical observation to be a frequent problem among pregnant Somali immigrants. Article II discusses whether there is a correlation between reduced psychosocial resources and the intensity of hyperemesis (which has been interpreted partly a social reaction and as a non-verbal way of breaking out of social isolation). In addition, a biological ethnic difference in hyperemesis in terms of the hormone hCG-isoforms is known (92), and it can be hypothesised that Somali women cope less well with this symptom of hyperemesis in a new social situation.

10) Inadequate verbal communication was identified by perinatal audit to be a sub-optimal factor likely to have contributed to 5 cases of perinatal deaths solely among ES women (Article III). A study in France showed that SSA immigrants had the highest relative risk of PNM (93). Although such increased risk may reflect low socio-economic status and medical problems, the authors are careful to discuss alternative explanations, such as language difficulties. A prior study in Denmark identified inadequate communication between immigrant women and health care providers: insufficient use of trained interpreters was claimed to be an obstetric risk factor (94).

11) Inadequate communication may also be due to mutual misunderstanding or different conceptions between caregivers and immigrant patients. In Article III the results of sub-optimal care can perhaps be attributed to this type of misunderstanding. For example, mothers from ES did not participate in routines of IUGR surveillance. It reflects a strategy among some ES women for keeping the foetus small in order to avoid obstructed delivery. From the

point of view of these women, the doctor's recommendation that they should participate in a surveillance program to avoid IUGR seemed inappropriate. Their reluctance did not stem from the fact that they were neglectful mothers, but because they wished to have a small baby, not comprehending that IUGR puts the infant at greater risk for death (see discussion in 4). Health care providers, on the other hand, are not aware of these strategies, so they do not tailor the information specifically for ES patients, resulting in misunderstandings. This scenario may explain why the surveillance of IUGR was sub-optimal among ES women, as compared to Swedish women (Article III).

12) Adjustments were made for maternal background factors such as age, parity, height, smoking, and cohabiting with the father of the child (Articles I, III). The National Epidemiological Centre of Sweden found that maternal height was associated with the birth weight of the infant, but also with PNM. SSA women were on average 4.5 cm shorter than Swedish women. Other immigrants were even shorter (25). However, the SSA group studied in this thesis was the only group with increased risk for SGA infant after adjustment for maternal height, which might indicate that the proportion of IUGR among SGA infants is higher in the SSA group (Article I).

13) Anaemia was more common among women of foreign origin (Article I). Anaemia is known to be associated with adverse outcomes, including PNM (69). However, the anaemia variable as derived from a register does not distinguish iron deficiency from other causes of anaemia such as malaria, chronic infection, inflammation, or hemoglobinopathies.

Pregnant women with diabetes are known to have a higher risk of PNM, which is partly related to foetal malformation (95),(96). Diabetes is also associated with a large-for-gestational-age infant which might increase the risk for obstructed labour. The elevated frequency of diabetes among foreign-born mothers in Article I, however, could not explain the increased PNM among infants to foreign-born women. In Article IV and V, diabetes was not a risk factor for prolonged labour among FGM/C women.

14) From the results of Article I and III, one might ask if there is not an underestimation in the Swedish registers of the number of congenital malformation cases among infants to foreign-born mothers. The increased risk of PNM among SGA infants in earlier studies has been largely caused by malformations (97). The results in Article III showed that only 12% of the perinatal deaths of infants to ES women were followed up by an autopsy, compared to 76% of the infants of Swedish mothers. Although some religions do not accept abortion in circumstances where severe foetal anomalies have been detected, the number of cases of malformation was equally prevalent among infants to Swedish-born as to foreign-born mothers.

Genetic disorders are known to vary among different ethnic groups in conjunction with the tradition of consanguinity (98),(99). Little is known about this topic in the SSA population in Sweden, which might be a subject for future study.

The number of registered cases of infections during pregnancy was too small over the study period to permit a meaningful analysis (Articles I, III). However, this is a general problem independent of the maternal country of



origin. There is still a general lack of knowledge about the prevalence of different infections and their impact on intrauterine death, regardless of maternal country of origin (100). Urinary infection and bacteruria were found to be more common among infibulated women in Sudan compared to non-circumcised patients (37). It can be discussed if there is a relation between urinary infection and PNM among pregnant FGM/C women in Sweden.

A medical history of previous stillbirth is known to be a risk factor for PNM (22). This has not been taken into consideration when adjustment was made for confounders (Articles I, III).

15) No relation between FGM/C, prolonged labour, or PNM was found (Articles IV, V). Only three earlier controlled studies on the topic have been found, after searching English, French, Spanish, Italian, and German publications. Berardi et al. presented a French study of obstetric outcomes comparing 71 circumcised women with 781 non-circumcised women of different ethnic backgrounds (mainly from Senegal) (41). No differences in asphyxia, C/S, or forceps delivery were found. The exact form of vulva excision was not described. De Silva performed a prospective controlled study of 167 immigrant circumcised women (mainly Sudanese) compared to 1,990 non-circumcised patients of various countries of origin but all living in Saudi Arabia (42). An important factor was that all the women were examined for the type of vulva trauma caused by FGM/C. The majority of the circumcised women were infibulated. A prolonged second stage of labour (>90 minutes primigravida/>60 minutes multigravida) found was more often among circumcised women, but there were no significant differences with the use of forceps. However, the author concluded that the second stage of labour might

not be prolonged if adequate steps are taken to defibulate a woman. None of the two studies were population-based. A Norwegian population-based register study of C/S showed that women from Africa's Horn had the highest frequency of emergency C/S due to prolonged labour (101). The women were not scrutinised for genital status and prolonged labour was based on diagnosis (ICD-8), and not the exact time of second stage labour.

It would appear important to revalidate earlier information if one is to provide the best care to circumcised women giving birth in a high-resource country like Sweden. Otherwise, there might be a risk that strong emotional feelings against the practice of circumcision obscure the rational way of evaluating obstetrics risks.

### *A historical reflection*

One hundred and fifty years ago, the perinatal death rate in Sweden was nearly on the same level as the perinatal death rate in Ethiopia today. One way Sweden reduced its high PNM rate was through improved training of midwives and popular education on health issues, e.g., infant care (22). Midwives were firmly established in *rural areas* by being recruited from the families of local farmers. This strategy provided for *good social acceptance*, enabling a successful implementation of obstetric techniques within a specific *cultural context*. Such a strategy could probably be used even today, in very different environments. If health care providers increase their knowledge of how ES women form their pregnancy strategies, it might provide one way of reducing PNM within this group. On the other hand, if immigrant ES women increase their knowledge of Swedish and of the way the Swedish perinatal care system works, and particularly if they were to receive patient

education in their own language about the nature of gestation and delivery from a Swedish perspective, it might help them revise their strategies for making motherhood safer. Authorities and administrators could fruitfully support the employment of immigrants, some of whom have a background in health care in their own countries, to support such an endeavour within the perinatal care service. The outcome can be one way to increase the efficiency of the Swedish health care system.

## GENERAL CONCLUSIONS

Infants born to SSA women have an increased risk of PNM and SGA compared to infants of native Swedish women or other immigrant groups. PNM seems to be related to various risk orientation and pregnancy strategies that are based on social rather than cultural circumstances and are related to poor health care experienced in their country of origin. Theoretically these strategies could partly be seen as rational “survival factors” for the mother in the country of origin, but they convert to “risk factors” for an adverse perinatal outcome when delivering in Sweden. Thus the pregnancy strategies in question were related to personal experience, rationality, and tradition regarding pregnancy and childbirth in their countries of origin.

The difference in risk orientation is illustrated by the fact that the ES women studied equated a safe delivery with a normal vaginal delivery, and thus they reduced food intake to limit growth of their baby. In their view this would avoid caesarean section and maternal mortality, but in embarking on this course of action, they also avoid seeking care when needed.

PNM was also found to be related to sub-optimal medical care due mainly to misinterpretation and miscommunication between health providers and ES patients. Potentially avoidable factors were more common among ES women than among Swedish women who suffered the perinatal death of their infants.

No association was found between FGM/C and PNM. Circumcised women had, in fact, lower risk of prolonged labour and a significantly shorter stage of labour compared to non-circumcised women.

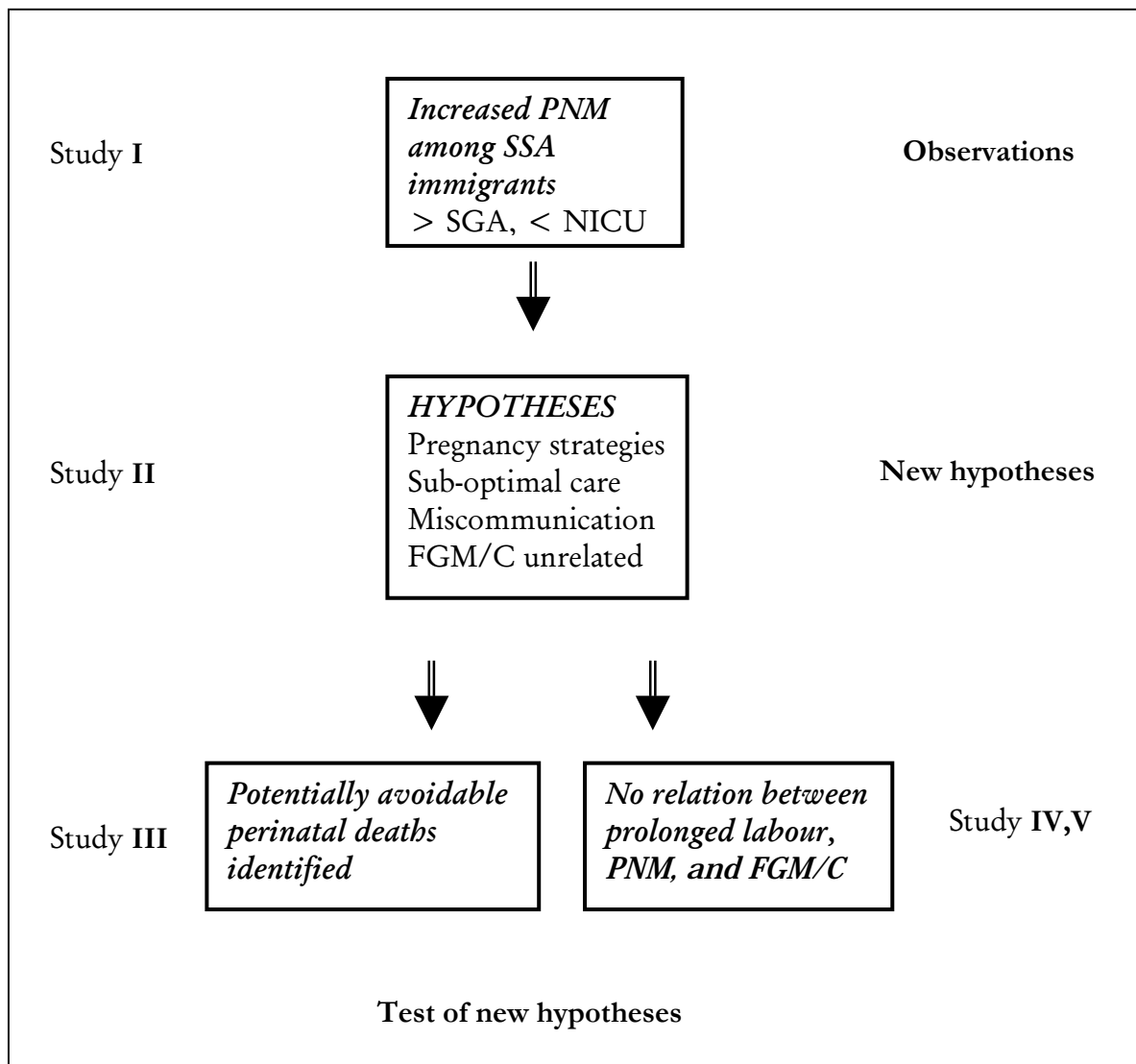
The Swedish antenatal care program is partly lacking the proper means to meet pregnancy strategies of the ES immigrant group. It appears important for ES women in Sweden to be better informed about perinatal health issues and encouraged to seek immediate health care when certain symptoms appear. An intense screening for IUGR and better intrapartal surveillance is recommended to avoid the possibility of sub-optimal care contributing to PNM.

The unfortunate interaction between specific pregnancy strategies among ES women and the sub-optimal performance of Swedish perinatal care services could be lessened if there were greater awareness of these circumstances among Swedish health care professionals, including a better use of interpreters or native-speaking semi-professionals.

Increased knowledge of pregnancy-related strategies, both among immigrant women, as well as among obstetricians and midwives, is a prerequisite of preventing PNM among women from Africa's Horn in Sweden.

When knowledge of the Swedish language has not yet been achieved, using an interpreter is essential for adequate communication, and this is a prerequisite of optimal care and surveillance, which in turn is indispensable for preventing PNM among ES immigrants in Sweden.

These findings, rather than being used to stigmatise, discriminate against, or stereotype a particular group of immigrants, should rather serve to focus attention on obstetric issues in a flexible and more acculturated way.



**Figure 7.** A conceptual model illustrating the approach and results of this study. The findings of the first study (I) generated new hypotheses (II), which were tested in subsequent studies (III, IV, V).

## SUMMARY IN SWEDISH

(POPULÄRVETENSKAPLIG SAMMANFATTNING)

### *Perinatal dödlighet bland invandrare från Afrikas Horn*

Avhandlingen visar att barn till kvinnor i invandrargrupper från Afrika söder om Sahara (majoriteten från Somalia och Etiopien), har högre perinatal dödlighet jämfört med barn till svenska kvinnor eller till kvinnor i andra invandrargrupper i Sverige. Perinatal dödlighet betyder att barnet dör under graviditeten, förlossningen eller under den första levnadsveckan. Avhandlingsarbetet är det första i sitt slag inom disciplinen obstetrik och gynekologi med syftet att studera perinatal dödlighet utifrån en kombination av följande perspektiv:

- 1 moderns födelseland
- 2 perinatale riskfaktorer
- 3 sociokulturella faktorer
- 4 vårdens standard
- 5 könsstympling/omskärelse

### *Är det behäftat med ökad risk att vara invandrare och föda barn i Sverige?*

För att besvara denna fråga får vi först definiera ordet "invandrare". I denna studie betyder benämningen "invandrare" helt enkelt att barnaföderskan är född utomlands. Tidigare studier från 70-talet visade, att det till och med gick bättre för invandrarkvinnor som födde barn i Sverige jämfört med svenska barnaföderskor. Majoriteten av invandrare var då personer som kommit från andra europeiska länder för att söka arbete i Sverige. Studier från 80-talet visade, att kvinnor som var "socioekonomiskt underprivilegerade", hade

dubbelt så hög risk att föda för tidiga och lågviktiga barn. I detta begrepp ingick att barnaföderskan kunde vara född utomlands. I Sverige har man alltså tidigare, till skillnad från många andra länder, inte kunnat visa att den perinatale dödligheten var högre bland invandrarkvinnor, även om de hade något mer komplikationer jämfört med svenska kvinnor.

I slutet av 80-talet kom de flesta invandrare från krigs- och katastrofområden i hela världen. I Sverige bor det idag ca 20.000 människor från Somalia och Etiopien. De flesta är invandrare sedan tidigt 90-tal och har således inte ingått i studierna som refereras ovan.

Syftet med det första arbetet i denna avhandling var att studera om den perinatale dödligheten var högre bland utlandsfödda kvinnor, och om det visade sig vara fallet, belysa riskfaktorers betydelse. Materialet bygger på nära 16.000 förlossningar i Malmö under åren 1990-1995. Sextionio procent av kvinnorna var födda i Sverige. Invandrargruppen av kvinnor från Afrika söder om Sahara (3%), visade sig ha en 4 gånger högre risk för att förlora sitt barn perinatalt jämfört med svenska kvinnor. Denna invandrargrupp hade också en ökad risk att föda för små barn. Trots att denna grupp visade sig ha en högre risk för komplikationer, blev barnen inte vårdade på neonatal intensivvårdsavdelning i högre omfattning än barn till svenskfödda mödrar. Den högre perinatale dödligheten kunde inte heller förklaras av kända sjukdomar eller livsstilsfaktorer.



## *Kan barnaföderskans graviditetsstrategier ha ett samband med perinatal dödlighet?*

Den andra studien i avhandlingsarbetet genomfördes i samarbete med en socialantropolog i syfte att söka efter nya infallsvinklar till eventuella orsaker kopplade till en högre perinatal dödlighet bland kvinnor från Etiopien eller Somalia (ES). Femton somaliska kvinnor intervjuades av antropologen angående deras graviditets- och förlossningserfarenheter i Sverige och i Somalia. Studiens resultat gav upphov till en *hypotes* över somaliska kvinnors graviditetsstrategier, risktänkande och hur detta kan påverka den högre perinatale dödligheten i denna grupp. I intervjuerna uttryckte många av kvinnorna *en rädsla för att dö i samband med komplicerade förlossningar*, t ex kejsarsnitt. Det kunde därför tänkas att kvinnorna var mindre benägna att söka vård, trots svåra symptom, om de misstänkte att handläggningen av symptomen skulle resultera i ett kejsarsnitt. Intervjuerna visade också, att bland somaliska kvinnor fanns det en allmän känd föreställning, att om man äter mindre under graviditeten leder detta till ett mindre barn och därmed en lättare förlossning. Ett missförstånd kan därför uppstå mellan vårdgivaren och den gravida kvinnan, t.ex. då ett tillväxthämmat foster upptäcks på mödravården. Doktorn vill å ena sidan öka graviditetsövervakningen, å andra sidan går den gravida kvinnans strategi just ut på att få ett litet barn, vilket kan leda till ett missförstånd mellan vårdtagare och vårdgivare. I resurssvaga länder som Somalia, där risken för kvinnor att dö under förlossning är bland de högsta i världen, kan dessa strategier ses som rationella. Men om läkare och barnmorskor i Sverige inte är medvetna om dessa strategier hos barnaföderskorna kan de riskera att förbise riskfaktorer och symptom i denna invandrargrupp. Detta skulle kunna bidra till en suboptimal handläggning av olika graviditetsproblem, vilket i sin tur kan leda till en högre perinatal

dödlighet. Om det dessutom uppstår kommunikationssvårigheter kan risken öka ytterligare.

### *Perinatalvård på lika villkor i Sverige?*

För att testa nämnda hypotes gick vi vidare med ett tredje arbete om mödra- och förlossningsvårdens standard i hela Sverige. Fanns det ett samband mellan de somaliska kvinnornas graviditetsstrategier och en suboptimal vård med ökad dödlighet som resultat? En grupp bestående av alla perinatalt döda barn födda i Sverige mellan åren 1990 och 1996 (n=63) till kvinnor från Etiopien och Somalia, jämfördes med en grupp svenska perinatalt döda barn från samma sjukhus (n=126). De jämförda barnen hade avlidit vid samma tidpunkt i relation till förlossningen (före, under eller efter). Vi studerade om det fanns skillnader mellan dessa grupper då det gällde faktorer som troligtvis orsakade att barnet dött. Vi tog också reda på om dessa faktorer berodde på modern, kommunikationen mellan vårdtagare och vårdgivare eller på den medicinska vården. Dessa typer av faktorer var vanligare i den afrikanska gruppen jämfört med den svenska. Vi fann bland annat, att fler fall bland de afrikanska döda barnen jämfört med de svenska, troligtvis hade kunnat förhindrats/förebyggts om:

- modern sökt vård tidigare vid allvarliga symptom under graviditeten
- modern inte avböjt kejsarsnitt i akuta situationer
- tolk använts vid uppenbar språkförbistring
- graviditetsövervakning av fostrets tillväxt följt befintliga rutiner
- fosterövervakning (CTG) under förlossning tolkats och handlagts adekvat av barnmorska eller läkare
- medicin givits till modern/prematurfött barn eller om barnläkares insatser startats tidigare vid födsel av sjukt barn

## *Har kvinnlig omskärelse något samband med perinatal dödlighet eller ett utdraget förlossningsförlopp?*

De flesta barnaföderskor från Somalia och Etiopien, boende i Sverige, är omskurna under barndomen. Under arbetets gång kom frågan upp om könsstympling kunde vara en viktig förklaring till den högre perinatala dödligheten. I den vetenskapliga litteraturen finner man mest beskrivningar från afrikanska länder, som säger att ärrbildning i kvinnans underliv skulle försvåra framfödandet av barnet genom förlossningskanalen. Av samma anledning uppges också förlossningen ta längre tid. Motståndet från ärret efter omskärelsen påstås vidare leda till syrebrist och hjärnblödning hos barnet, vilket i sin tur kan leda till att barnet avlider. De flesta beskrivningar av komplikationer hos omskurna kvinnor återkommer som citat i artiklarna och endast några få kontrollerade studier i ämnet har utförts.

I det fjärde arbetet studerades därför alla journaler till mödrar från Etiopien och Somalia från hela Sverige med perinatalt döda barn under en 7-årsperiod (n=63). Samtliga barnaföderskor var omskurna i någon form. Inte i något av fallen kunde vi finna att dödsorsakerna var förknippade till ett utdraget förlossningsförlopp eller på annat sätt till skadorna efter omskärelsen. Vi drog därför slutsatsen att könsstympling *inte* ökar risken för perinatal död om förlossningen sker i en resursstark miljö, t.ex. den svenska förlossningsvården.

I det femte och sista arbetet studerades hur lång tid det tog att krysta fram barnet för förstföderskor som var omskurna (n=83) jämfört med icke omskurna (n=2779). När vi tagit hänsyn till en rad faktorer såsom barnets ålder och vikt, om modern fått ryggbedövning eller instrumentell förlossning, visade det sig att de omskurna kvinnorna födde signifikant *fortare* än de icke

omskurna (34 respektive 53 minuter). De hade således en *lägre* risk för utdraget förlossningsförlopp. Detta resultat står i kontrast till tidigare publicerade studier. Vi drog av detta ytterligare slutsatser som stödjer antagandet om att omskärelse inte påverkar utdrivningsskedet i en resursstark förlossningsmiljö med adekvata riktlinjer för handläggning (t.ex. defibulering) av omskurna kvinnor.

### *Slutsatser*

För att sänka den perinatala dödligheten rekommenderas följande åtgärder inom vården av gravida invandrarkvinnor från Afrikas Horn:

- Intensifierad övervakning av fostertillväxt under graviditeten
- Förbättrad fosterövervakning under själva förlossningen
- Ökad utbildning för invandrarkvinnor, så att de får möjlighet att se fördelarna med att ändra sina strategier för att uppnå en okomplicerad förlossning i det nya hemlandet
- Ökad och mer specificerad kunskapsspridning bland läkare och barnmorskor om adekvata riktlinjer för handläggning av gravida, utlandsfödda kvinnor
- Ökad användning av tolk i möte med personer som inte behärskar det svenska språket
- Spridande av kunskap om att omskärelse inte har samband med utdragen förlossning eller perinatal dödlighet i Sverige, så att det förebyggande arbetet mot kvinnlig omskärelse motiveras på korrekta grunder

### *Framtida perspektiv*

Den förhöjda perinatala dödligheten kan möjligen vara *ett* symptom på en ofullständig integrationsprocess. Avhandlingen har belyst områden inom mödra-, förlossnings- och neonatalvården som har en förbättringspotential.

Det finns emellertid flera outforskade områden om orsakerna till den högre perinatale dödligheten bland barn till utlandsfödda kvinnor. Här bland kunskapen om hur moderns eget tillstånd som foster och under barndomen påverkar henne själv och det väntade barnet eller om betydelsen av ärftliga sjukdomar. Infektioner som orsakar intrauterin fosterdöd är generellt ett svårdiagnostiserat område i en gravid population, oavsett dess etniska bakgrund. Vidare är sambandet mellan sociala faktorer och perinatal död generellt svårt att studera bland utlandsfödda medborgare på grund av brist på information i våra svenska register.

Sambandet mellan foster med försämrade tillväxt och risk för perinatal dödlighet är dock väl känt. I framtida studier bör man försöka att skilja ut de barn som är små på grund av sjukdom från dem som enbart är genetiskt små i en multietnisk population. Om forskningsfokus utvidgas, kan vi med utökade metoder också ta reda på mer om invandrarkvinnornas egna föreställningar och förväntningar på den svenska mödra- och förlossningsvården.

Det är min förhoppning att avhandlingens resultat även kan utgöra ett underlag för beslutsfattare inom hälso- och sjukvården och för ett socialpolitiskt arbete inom kvinno- och barnsjukvården.

# SUMMARY IN SOMALI

(WARBIXIN KOOBAN OO SOMALI AH)

## *Dhimashada cunuga inta uu uurka ku jiro ama foosha gudaheeda ama isbuuca ugu horeeya ee uu dibada joogo*

Qoraalku wuxuu na tusayaa, in caruurta iyo haweenka ajnabiga ah oo ka yimid qaarada Afrikada koonfurta ka xigta dhinaca Saharaha (intooda badana ka yimid Somalia iyo Etiopien) in ay dhimashada cunuga inta uu uuka ku jiro ama foosha gudaheeda amaba isbuuca cunuga aduunka ugu horeeysa ka badan yihiin haddii loo barbar dhigo caruurta Swedishka iyo dumarka swedishka amaba haweenka ajnabiga kale. (Perinatal dödlighet) ”ereygaan macnihiisu waa in uu cunugu dhinto inta uu uurka ku jiro, xiliga uu dhalanayo ama foosha gudaheeda ama inta ay hooyada umusha ku jirto isbuuciisa ugu horeeya”. Qoraalkaan waa kii ugu horeeyey oo laga sameeyo qeybaha umulisooyinka iyo kuwa bartay cudurada haweenka (gynekologi) iyagoo ulajeedadoodu ahay in ay wax ka bartaan (Perinatal dödlighet) dhimashada cunuga inta uu uurka ku jiro, ama xiliga foosha ama isbuuca koowaad ee noloshiisa, waxayna baaristoodu ku wajaheen jihooyinkaan hoos ku qoran.

- 1 Wadanka ay hooyadu ku dhalatay
- 2 Dhinasha cunuga inta uu uurka ku jiro, foosha gudaheed ama isbuuca nolosha ugu horeeysa qatarteeda
- 3 Dhaqanku wuxuu ku saamo leeyahay arintaan
- 4 Nooca xanaano caafimaad ay hesho hooyadu
- 5 Gudniinka fircooniga ah/kan sunada ah

## *Ma qatar soo saa 'iday baa in ay haweenwydu noqoto ajnabi kuna dhasho Sweden*

Si aan ugu jawaabno su áashan marka hore waa inaan qeexnaa ereyga "invandrare" ama "ajnabi" baaritaankan waxbarasho ereygu wuxuu macnihiisu yahay isagoo sax ah qayaxana in qofku ku dhashay wadankan dibadiisa. Baaritaan horey loo sameeyey 70 naadkii waxay ka aragnay in ay ka wanaagsaney ama qatartu ku yareyd haweenka wadankan dibadiisha ku dhashay ama ka yimid oo ku dhalay sweden haddii loo barbar dhigo haweenka Swedishka ah oo caruur dhalay. Laakiin inta badan oo haweenka ajnabiga ahaa waqtigaas waxay ahaayeen shakhsiyo ka kala yimid wadamo kale oo yurubta ka tirsan kuwaasoo shaqo u soo raadsaday wadankaan Sweden. Baaritaan kale oo 80 maadkii la sameeyey waxay na tustay in haweenka ka tirsan bulshada qeybteeda dhaqaalaha yar in ay qatartu labo jibaar ka badan tahay in ay cunugu dhicis noqdo ama miisaan yar ku dhasho, taasna waxaa ku jira in ay haweeneyda wax dhshay ay tahay mid iyadana wadankaan aan ku dhalan oo ajnabi ah.

Dhamaadkii 80 naadkii ayey yimaadeen qeybaha intooda badan oo ajnabiga ah, iyagoo ka kala yimid kana soo cararay dagaal iyo burbur dunida qeybeheeda kala duwan. Sweden waxaa degan maanta qiyaastii ilaa 20.000 oo qof oo Somali, Eritrea och Etiopien, intooda badana waxay yimaadeen bilowgii 90 naadka. Baaritaan Malmö laga sameeyey waxay sheegeysaa in haweenka degan xaafadaha ajnabigu ku badan yihiin, ay khatartu ka badan tahay dhibaatooyin ku saabsan inta haweeneydu uurka leedahay iyo makey dhaleyso ama foolaneyso marka loo eego haweenka kale oo dagan xaafadaha kale. Sweden waxay kaga duwan tahay wadamo badan oo kale in aysan ku badneyn dhimasha cunugu inta uu uurku ku jiro ama xilliga uu dhalnayo ama

isbuuca ugu horeeya noloshiisa ee haweenka ajnabiga xittaa haddii ay haweeneyda wax dhaleysa ee ajnabiga ah ay qatartu uga badan tahay iney wax gaaraan marka loo barbar dhigo kuwa haweenka kale. Ulajeedada shaqadan qeybteeda koowaad ee baaritaanku waa in la barto haddii uu (Perinatal dödlighet) macnaha marku uu cunigu uurka ku jiro ama foosha gudaheed ama isbuuca ugu hereysa noloshiisa uu ku badan yahay haweenka ajnabiga ah iyo in shaaca laga qaado khatartiisa haddii ay baaritaanku sidaas muujiso. Waraaqaha daraasadan laga baranayo waxay ku saleysan yahiin ama laga soo dhex baaray 16.000 oo qof oo ku umushay Malmö intii u dhaxeysay 1990-1995.

Lixden iyo sagaal boqolkiiba 69% naagahaas waxay ku dhasheen Sweden. Haweenka ajnabiga ah ee ka yimid Afrika dhinaceeda koonfureed ee Saxaraha oo ahaa 3%, waxay 4 jibaar qatar ugu sugnaayeen in ay dhalaan cunug dhintay marka loo barbar dhigo haweenka Swedishka. Waxay kaloo qatar ugu sugnaayen iney dhalaan cunug ka miisaan yar caruurta kale. Xitaa ayadoo daraasadaas na tustay iney dadkaas kaga qatar badnaayeen in ay dhibaatooyin ku dhacaan xiliga foosha haddana ma aysan dhicin in tirada caruurta dhalatay ay u baahdaan in dhalo lagu sii hayo ay ka badnaayeen tirada caruurta swedishku dhaleen ee dhalo u baahan in lagu hayo. Dhimashada dhalaankaas oo saa íday xitaa laguma sharixi karo jiro ama hooyada sida ay nafteeda u ilaaliso sida haddii ay balwad leedahay ama in kale iyo cunuga daryeelkiisa.



*Umulisadda howgalkeeda ma waxbuu ka saameyn karaa dhimashada cunuga inta uu uurka ku jiro ama xiliga foosha ama isbuuca noloshiisa ugu horeysa?*

Baaritaanka labaad ee wax baaristan waxaa lala sameeyey dadka ku takhasusay cilmiga bulshada si loo helo jidad kale oo sabab u noqon karta dhimashada canuga (Perinatal dödlighet). Waxaa wareysi lala yeeshay 15 haween oo Somali ah oo ay la yeesheen dadka ku takhasusay cilmiga bulshada, waxaa wax laga weydiiyey uurkooda waayo aragtidooda foosha hadii ay ku dhaleen Sweden amaba Somaliya. Natiijadii ka soo baxday daraasadaas waxay aasaas u noqotay xaalada uurka ee haweenka Somaliyeed, khatartiisa iyo sida uu saameyn ugu leeyaha kooxdaas la wareystay siyaadka dhimashada cunugu inta uu uurka ku jiri, xilliga foosha iyo isbuuca ugu hereeyaa noloshiisa. Wareysigaas waxay haween badan ku nuuxnuuxsadeen cabsida ay ka qabaan khatarta foosha, tusaale ahaan in lagu qalo cunuga. Marka waxaa la oran karaa in ay haweenkaasu ay ka caga jiidayeen in ay codsadaan xanaano caafimaad xitaa haddii xaalada qaliin ay adagtahay iyagana ay ogyihiin natijada ka soo baxda marka qof lagu qalo cunug. Baaritaanku wuxuu kaloo na baray in ay haweenka wareysiga maray ay aaminsanaayeen haddii uu haweeneydu cuno cunto yar inta uu uurka leedahay in ay dhaleyso cunug miisaan yar kadibna ay foosha u fududaaneyso. Mala á waalkaas wuxuu dhaliyaa is fahmid la áan u dhaxeysa kalkaaliyaasha iyo haweenka Somalida markii uu dhasho cunug aan koritaankiisu fiicneyn. Dhaqtarku wuxuu isagu doonayaa inuu calooshu korto lakiinse haweeneyda uurka leh waxay dooneysaa iney dhasho cunug yar oo aan miisaan weyneyn, taasi waxaey keeni kartaa isla wadashaqeyn xumo ku timaada kan xanaanada caafimaad qaataha ah iyo kan siiyaha. Wadamada tabarta yar oo aan haysan qalab ku filan sida Somalia, halkaas oo ay khatarta in ay haweenku dhintaan inta ay uurka leeyihiin ay ugu badan tahay

adduunka, waxaa la oran karaa in ay fikradaas ay naagtu rabin in ay cunug weyn dhasho ay caqli gal tahay. Laakiin hadii dhaqtar iyo umuliso jooga Sweden aysan la socon arintaan ay hooyada wax dhaleyso wadato waxay keeni kartaa in aanan laga fekerin khatarta ay kooxdaan ajnabiga ah wadato, taasna waxay kordhin kartaa in uu cunugu dhinto inta ay hooyadu uurka ku sido ama xiliga foosha ama isbuuca ugu horeeya noloshiisa. Haddii ay jirto is faham la'aana waxay sii saa 'idineysaa in ay khatartu sii badato.

### *Xanaanada Hooyada iyo caruurta ee Sweden ma isku mid baa mise wey kala wanaagsan yihiin?*

Si loo baaro arintaan kor xusan ayaan waxaan bilownay shaqadeenii sadexaad oo ku saabsaneyd xanaanada hooyada iyo caruurta ee Sweden wanaagsanaanteeda inagoo isku barbar dhigeyna degmooyinka wadanka oo dhan. Ma jiraan wax saameyn ay ku leedahay dhinaca fikradaha haweenka Somaliyeed ee uurka iyo xanaanada hooyada iyo caruurta ee wadankan oo sidii hore ka liita taasoo natiijo u noqota dhimashada cunuga uurka ku jira ama xiliga foosha? Labo kooxood ayaan isku barbar dhignay, koox waxay ahaayeen kuwo ay saameysay dhimashada cunuga inta uu uurka ku jiro ama xiliga foosha ama markuu dhasho isbuuca ugu horeeya kuwaasoo ka kala yimid Etiopien iyo Somalia caruurta ku dhalay wadankan sweden xiligii u dhaxeeyey 1990 iyo 1996 (n=63). Kuwaas waxaa la barbar dhigay koox kale oo Swedish ah oo iyaguna caruur ku dhalay isla isbitaalkaas caruurtoodana ay dhinteen isla xiliga foosha (horteeda, gudaheeda ama dabadeed) (n=126). Waxaan daraasad ku sameynay haddii uu faraq u dhaxeeyo labadaas kooxood kaasoo raadinayney haddii uu farqaas sabab u ahaa dhimashada cunuga. Waxaan kaloo baareyney haddii qaladkaas ay sabab u ahayd hooyada, is afgaranwaa.

La'aan dhex martay bukaansocodka iyo xanaaneeyaha amaba ay daawo sabab u noqotay dhimashadaas. Kooxda afrikaanka ahayd waxaa caadiyan ka ghex muuqday sababo badinayey in ay dhimashadu dhinacooda u badneyd marka loo barbar dhigo kooxda u dhalatay wadankan Sweden. Waxaan kaloo helnay in kiisas badan oo sababay caruurtooda iney dhintaan marka loo barbar dhigo Swedhishka laga hortagi karay khatartaas oo curuurtaas la badbaadin karay:

- Hooyadu waxay horey u soo codsatay baaritaan marka ay iska dareentay in ay wax khatar ah ku soo siyaadeen xilliga ay uurka lahayd
- Hooyadu wey ogoleyd in la qalo haddii ay wax degdeg ahi yimaadaan
- Tarjubaan ayaa la isticmaaley marka luuqada laysku af garan waayey
- Haddii lala socday uurka xilligii uu cunugu caloosha ku korayey taasi ma buuxineysay mabaadiida u dagan wadankeena
- Qalabka lagula socdo Cunuga uurka ku jirey (CTG) xilliga foosha socoto in si fiican ay umulisadu u fasiratay ama dhaqtarku
- Daawo sax ah ma la siiyey hooyada/cunuga ama haddii dhaqtar caruur loo yeeray markiiba uu dhashay cunug jiran

### *Sabab ma u noqon kartaa gudniinka haweenka dhimashada cunuga ama soo jiidida marka uu dhalanayo cunuga?*

Inta badan haweenka caruurta dhalay oo ka kala yimid Somalia iyo Etiopien, oo dagan Sweden waxaa la guday markey caruurta ahaayeen. Howsha baaritaanka gudaheeda waxaa soo noqnoqoneysay su'aasha ah in gudniinkan fircooniga ah uu yahay sabab sharaxaysa dhimashadaan caruurta xiliga uurka hortiis, foosha gudaheeda amaba dabadeed ee badatay.

Cilmiyada qoraalka ah ee laga diyaariyey wadamada afrikaanka ee ku saabsan gudniinka, waxay leeyihiin in ay calaamad nabar boskoodey ku reebeeyso haweeneyda hoos. Foosha waxaa la yiraahdaa iney waqti dheer qaadato. Adeyga nabarkaas boskooday ee ka haray gudniinkii waxay cunuga u keeneysaa marka uu soo baxayo ogsojiinka neefta oo ku yaraada iyo maskaxda oo dhiig kaga furmo, taasina waxay sababtaa inuu cunugu geeriyoodo. Sharaxaada intooda badani oo ku saabsan dhibaatan ay sabab u tahay gudniinku iyo haweenka gudanba waxay ku soo laalaabaneysaa qoraalada kala duwan iyadoo aan jawaab sax laga bixin karin iyo iyadoo baaritaan arintaan ama maadadan uu wax aad u yar yahay.

Shaqadeena afaraad ee baaritaanka waxaan dib ugu noqonay oo akhrisanay feylalkii hoyooyinka ka yimid Wadamada Etiopien iyo Somalia oo ku kala firirsanaa Sweden goboladeeda iyo degmooyinkeeda , kuwaasoo caruurtoodii dhinteen xilliga uurka guduhiisa, xiliga foosha ama dhalshada cunuda dabadeed, xilligaas dhimashada caruurta dhacday oo an soo aruurinay feylalka waxay u dhaxeysay illaa mudo 7 sano gudaheed ah (n=63). Kuligood hoyooyinka caruurta dhalay wey gudnaayeen oo u gudnaayeen noocyo kala duwan ee gudniin ah. Haba yaraatee hal kiisna kuma aanan helin in sababta dhimashada cunuga ugu wacneyd ay lug ku lahayd marka cunuga la soo jiidayey xilliga foosha ama gudniinka siyaabihiisa. Markaas ayaan gaarnay fikrada ah in uu gudniinka fircooniga ah uu sababin khatarta dhimasha xilliga foosha "horteeda, gudaheeda iyo marka uu cunugu dhasho noloshiisa inta ugu horeysa". Haddii ay dhalashada cunugu uu ku dhasho meel shaqaalaha ama umulisayaashu ilaalinayaan oo heegan yihiin markuu cunugu fooda keenayo sida wadankaan Sweden.

Qebta Shanaad ee baaritaankeena oo ah tan ugu dambaysay waxaan daraasad ku sameynay imisa daqiiqo ayey ku qaadataa hooyada ugubka ah oo gudan iney soo riixdo cunuga marka uu soo baxyo (n=83) marka loo barbar dhigo kua aan gudneyn (n=2779). Markaan u kuur galnay inagoo fiiro gaar ah u yeelaneyno sida miisaanka cunuga iyo da'diissa, haddii hooyadu isticmaashay kabuubyada dhabarka, qalabka dhalimada fududeeya, waxay daraasadaasi na tustay in haweenka gudan ay ka dhaqsi dhali ogyihiin haweenka aan gudneyn (34 ilaa 54 daqiiqo) ay ka dhaqsi badan yihiin iyo sidoo kale ay ka qatar yaraayeen marka laga soo jiidayo cunuga madaxiisa taas oo bilcagsi ku ah dhaawacyadii hore. Markaas ayaan haddana mar labaad go 'aansanay in uu gudniinku wax saameyn ku lahayn soo saarida ama soo jiidida cunuga marka uu madaxa keeno marka ay hooyadu ku dhasho isbitaal qalabkiisu u dhan yahay taasina waxay bilcagsi ku tahay sidii wax looga qorey ama looga sheegay kooxdaan.

### *Go'aan*

Si loo yareeyo dhimashada cunuga "inta uu uurka ku jiro, foosha gudaheeda amaba xilliga noloshiisa ugu horeysa" waxaan ku talineynaa arimahaan ku saabsan xanaaneynta hooyooyinka ajnabiga ah ee ka yimid wadamada geeska Afrika:

- Saa 'idiya la socodka koritaanka cunuga caloosha ku jira xilliga uurka
- Wanaajiya cunuga ilaalintiisa inta hooyadiis ka soo baxayo
- Saa 'idiya cilmiga haweenka ajnabiga si u arkaan wanaaga ku jira in ay fikradooda ay qabaan marxalada uurka si ay u gaaraan fool iyo dhilitaan dhibaato la'aan ah ay ka barten wadankooda cusub

- Saa 'idnimo iyo faafin cilmiyeed oo ku wajahan shaqsiyaadka dhakhaatiirta ah iyo umulisooyinka haysta fikradaha bilcagsiga ku ah haweenka ajnabiga ah ee uurka leh
- Saa 'idiya isticmaalka tarjubaanka marka aad la kulmeysaan shaqsi aan luuqada Swedishka si fiican u aqoon
- Faafiya cilmiga ku saabsan in uu gudniinku si toos ah u saameyn foosha oo xilligeedu dheeraado ama dhimashada cunuga "inta uu uurka ku jiro, xilliga foosha ama waqtiga ugu hereysa noloshiisa" wadankaan Sweden, si shaqooyinka ku saabsan ka hortaga gudniika haweenka sabab looga dhigo aasaas daraasad oo sax ah

### *Aragtida Mustaqbalka*

Koritaanka dhimashada cunud "inta uu uurka ku jiro, xiliga foosha amaba waqtiga ugu horeeya noloshiisa" waxay qiyaas ahaan noqon kanta kalaamada ka mid ah ku fashilmid ka tidim dhinaca isdhexgalka bulshada. Baaritaanka daraasadaan waxaan shaaca ka qaadnay qeybaha ku wajahan hooyada - foosha iyo dhalitaanka xanaaneysta hooyada iyo caruurta oo aad isleenahay in laga wanaajin karo sida uu maanta yahay iyo in la is tuso in isdhexgalka bulshadu ay u baahan tahay iney labada dhinacba ka timaado.

Waxaa jira sida xaqiiqda ah in meelo baaritaano kala duwan lagu sameeyey taasoo sal ku leh saa'idida ama koritaanka dhimashada cunuga "inta uu uurka ku jiro, xilliga foosha amaba waqtiga noloshiisa ugu hereysa" ee caruurta hooyooyinka ajnabiga ah dhaleen. Cilmiyadaan gudahood ama baaritaanadaan gudahood waxaa ka dhex muuqda xaalada hooyada marka ay iyadu aheyd cunug iyo xiliga caruurnimadeeda ay u saameyneyso uurkan amaba su'aalaha

ku saabsan cudurada dhaxalka gala ay wataan haweenka bulshadeena ku cusub iyo caruurtooda.

Infekshan (nabareysi) iyo bukaan haweenka hoos ka gala waa arin guud ahaan adag in baaritaan badan lagu sameeyo haweenkaas uurka leh meel kastaba ha ka yimaadaane. Sidoo kale iney wax isugu jiraan xaalada nololeed iyo dhimashada cunuga guud ahaan wey adag tahay in daraasad lagu sameeyo dadka wadanka dibadiisa ku dhashay sababtoo ah warbixin darro ku saabsan hab diiwaan gelinta wadankeena.

Xiriirka u dhaxeeya cunug koritaankiisu xumaaday iyo khatarta uu ugu sugan yahay cunugu inuu naf waayo waa wax la wada ogsoon yahay, daraasadaha mustaqbalka waxaa quman in lagu hagaajiyo in cunuga miisaan yar ku dhashay jiro awgeed inta la fiirin lahaa cunuga farac u leh oo xidikiisu ka soo jeedo dad jirkoodu yaryar yahay. Haddii la balaariyo daraasada waxaan ogaan karnaa iyadoo qayaxan haweenka ajnabiga ah fikradaha ay qabaan iyo waxyaalaha ay ka rajeynayaan Xarunaha xanaanda hooyada iyo dhalitaanka ee Sweden.

Waxaan rajo wanaagsan ka qabaa in natiijooyinka soo bixi doona ay asaas u noqoto dadka go'aamada ka gaara howlaha caafimaadka iyo bukaansocodka iyo sidoo kale dadka ka shaqeeya arrimaha bulshada kuwaasoo xooga saaraya arimaha isdhaxgalka bulshada.

## CLINICAL RECOMMENDATIONS

### *The importance of experience, rationality, and tradition for risk assessment in pregnancy and childbirth*

#### **Patient information**

- Inform ES women of the advantage of regular ANC check-ups and instruct them to seek immediate health care when severe symptoms appear. Educate these ES women about regarding the criteria for severe symptoms.
- Inform SSA women of the reasons for C/S and the safety of this procedure in Sweden. Where one has several pregnant SSA women, it may be advisable to form a specific parents education group.
- Despite the medical approach of hyperemesis among foreign-born women, this symptom might also be a result of low psychosocial support.
- Provide individualised education on nutrition. Identify what a “normal intake and weight-gain” means for a particular pregnant ES woman.
- Emphasise that the Koran excludes pregnant and lactating women from fasting during Ramadan.
- Discuss the meaning of surveillance of foetal growth and foetal movements.

#### **Medical surveillance during pregnancy and delivery**

- Offer ES women foetal growth monitoring by ultrasound in the third trimester.
- Discuss both doctor's and patient's conception of C/S *prior* to the advent of an obstetric emergency.



- Make certain that obstetricians and midwives know how to deliver an infibulated woman. PNM and obstructed labour do not seem to be associated with circumcision in an environment of advanced obstetric care.
- Take care that emotional feelings against the practice of FGM/C do not interfere with a rational evaluation of obstetric risks.
- Pathological signs in foreign-born women and their infants need the same surveillance, treatment, and intervention as Swedish-born women and their infants.
- Strive to attain a good dialogue with the foreign-born woman, as this will also help to ensure good practices recommended by the National Board of Health and Social Welfare.

#### **Information for women from Africa's Horn**

- Improve your knowledge of Swedish and of the ANC routines in Sweden.
- Understand that habits which may be appropriate in your country of origin may not always be appropriate in Sweden. Speak with your care provider about strategies for making motherhood safer for you.
- Participate in the patient education group during pregnancy.

#### **Health administrators**

- The Swedish ANC programme has, heretofore, lacked appropriate means to meet the pregnancy strategies of ES immigrants. As a matter of public policy, it appears that ES women should be better informed about perinatal health issues.
- Provide information on national guidelines, establish routines of quality controls, and set up local audit systems.

- Address the need to revise the guidelines for utilising interpreters in the perinatal care services.
- Support and co-ordinate further investigations and interventions on a national level.
- Support the employment of SSA immigrants within the perinatal care service, and seek out immigrant medical personnel and para-professionals for this purpose.

# CLINICAL RECOMMENDATIONS IN SWEDISH

(KLINISKA REKOMMENDATIONER)

## *Vikten av erfarenhet, rationellt tänkande och traditioner vid riskbedömning av gravida invandrarkvinnor från Afrikas Horn*

### **Patientinformation**

- Informera kvinnan om fördelarna med regelbundna MVC-besök samt att söka akut vid allvarliga symptom. Upplys kvinnan om vad *du* menar med allvarliga symptom, t ex buksmärtor eller blödningar i sen graviditet.
- Diskutera innebörden av kontroller av fostertillväxt och fosterrörelser – såväl utifrån *kvinnans* attityder som *dina* egna medicinska aspekter om riskerna för det tillväxthämmade fostret.
- Informera kvinnan om medicinska indikationer till kejsarsnitt och om säkerheten omkring ingreppet i Sverige jämfört med kvinnans hemland.
- Individualisera kostinformationen under graviditeten. Försök att identifiera vad som är ”normalt kostintag” för just denna kvinna.
- Det bör understrykas att Koranen ej påbjuder gravida eller ammande kvinnor att fasta under Ramadanperioden.
- Om du har flera gravida patienter från Afrikas Horn, kan det vara av värde att bilda en egen föräldrarutbildningsgrupp för dem.

### **Medicinsk övervakning under graviditet och förlossning**

- Erbjud en liberal tillväxtkontroll med ultraljud under tredje trimestern i avsikt att identifiera tillväxthämmade foster.

- Graviditetsillamående kan, förutom de medicinska orsakerna, vara ett tecken på bristande psykosocialt stöd.
- På förlossningsavdelningen, diskutera dina *och* patientens föreställningar om kejsarsnitt *innan* en eventuell akut situation uppstår.
- Medicinska patologiska tecken bland kvinnor från Afrikas Horn och deras barn kräver samma övervakning och handläggning som svenska kvinnor och deras barn.
- Se till att du vet hur du förlöser en infibulerad kvinna (är hon defibulerad eller behövs det incision?). Ärren efter könsstymningen *i sig* ökar då inte risken för ett utdraget förlossningsförlopp eller perinatal död.
- Låt inte dina egna känslor mot könsstymning/omskärelse hindra dig från att göra objektiva obstetriska riskbedömningar.
- Försäkra dig om en bra dialog med invandrarkvinnan då detta kan underlätta för dig att följa Socialstyrelsens råd och rekommendationer.

### **Information till kvinnor från Afrikas Horn**

- Förbättra dina svenskkunskaper.
- Förbättra dina kunskaper om den svenska mödra- och förlossningsvården.
- Deltag regelbundet i föräldrautbildningen som erbjuds till alla gravida kvinnor i Sverige.
- Goda vanor och seder i hemlandet faller inte alltid väl ut i Sverige. Diskutera dina föreställningar om hur man bäst uppnår en okomplicerad förlossning med din barnmorska och läkare.

### **Beslutsfattare inom hälso- och sjukvården**

- Den svenska mödra- och förlossningsvården har hittills saknat kunskap om den nämnda invandrargruppens graviditetsstrategier. Riktlinjer för

handläggning av denna invandrargrupp samt en förbättrad upplysning om den svenska perinatalvården bör därför utformas.

- Kvalitetskontroller bör även omfatta integrationsfrågorna.
- Se över sjukvårdens rutiner för tolkservice.
- Rekrytera och anställ vårdpersonal med ursprung från Afrikas Horn.
- Stöd fortsatt forskning inom området och utformning av åtgärdsprogram på nationell nivå.

# CLINICAL RECOMMENDATIONS IN SOMALI

(TALO KA BIXIN HAB DAAWEYNATA)

*Muhiimada waayo aragnimada, udiyaargarow,  
wanaagsan iyo dhaqan ahaan habka loo arko haweenka  
uurka leh oo ka yimid geeska qaarada Afrika*

**Hab warbixineedka Bukaana socodka**

- Wargeliya haweenka muhiimada ay leedahay in si joogto ah loola xiriiro "Xarumada haweenka uurka leh" MVC sidoo kalena in ay aadaan xarunta degdega haddii ay isku arkaan calaamadao khatar u muuqdo. Una sharaxa haweenkaas waxyaalaha khatarta la oron karo.
- Kala sheekeysta muhiimada ay leedahay la socodka cunuga caloosha ku jira sida uu u korayo iyo sida uu ugu dhaqdhaqaaqayo caloosha. Sidoo kale fikradaha daawooyinka ay hooyadu u baahan tahay iyo hooyadu sida ay iyadu u aragto arinta daaweynata.
- U sharaxa haweenka habka daawada marka ay arintu gaarto in cunuga lagu qalo hooyada iyo marka la qalayo waxyaabaha ay badbaado ahaan u baahan tahay in la sameeyo in ay jiraan wadankan Sweden.
- Shakhsi ahaan u wargeli hooyada cuntada ay u baahan tahay inta ay uurka leedahay. Isku day in aad u bayaanisid waxa caadiga ah "oo ay cunto ahaan u baahantaya" hooyada ay quseyso oo iyadu u baahan in ay cuntadaas qaadata. Waa in la ogaadaa in uu quraanku uusan ku qasbeyn in haweeneyda uurka leh ama tan cunuga nuujineysa ay soomaan xilliga bisha Ramadaanka.

- Haddi aad maamushid dhowr haween oo ka yimid geeska Afrika waxaa wanaag ku jiraa in aad u abuurtaan ama u aasaataan siminaar kooxdoodaas waalidiinta noqonaya.

### **Caafimaad dhowrka xilliga ay haweeneydu uurka leedahay iyo kan foosha**

- U sameeya baaritaanka sawirida "ultraljud" koriinka cunuga caloosha ku jira kadib marka sadex bilood ka soo wareegtay xilliga ay caadada heli lahayd hooyadu.
- Lalabada la socota marka ay haweeneydu uurka leedahay waxay noqon kartaa xitaa marka laga reebo dhinaca daaweynta, in hooyadu aysan laheyn wax xiriir dhinaca bulshada ama uu ku yar yahay taasoo keenta in ay dhibkeeda aysan haysanin qof ay u sheegato.
- Marka aad joogtaan xarunta lagu ummulo, ka wada hadla idinka iyo haweeneyda dhaleysa fikrada ay ka qabto cunuga laysku qalo inta aysan imaan xili lagu qasban yahay in qaliinkaas la sameeyo.
- Calaamad yar oo jiro ah oo aad ka argtaan baaritaanka aad ku sameyseen haweenka ka yimid geeska Afrika iyo caruurtoodaba waxey u baahan yihiin in loo daryeelo oo loo ilaaliyo sida kuwa Swedhishka ah iyo caruurtoodaba.
- Waa inaad wax ka barataan sida loo dhaliyo haweenka lagu sameeyey gudniinka fircooniga ah (iyadu iney furan tahay misse goormee ayey u baahan tahay in la furo ama loo jeexo?). Dhibkii uu geystay gudniinku sidiisaba ma kordhinayo in ay foosha xili dheer qaadato ama uu cunugu dilmo inta uu uurka ku jiro, xilliga foosha ama isbuuca noloshiisa ugu horeysa.
- Ha ku xalin arinta fikrada ama dareenka aad adigu ka qabtid gudniinka fircooniga ah/kan aan ahayn, yeysana kaa xayirin in aad sameysid howl

wanaag aan dhana raacsaney iyo adigoo isticmaashid xirfadaada umuliso si aad khatarta uga hor tagtid.

- Si fiican uga warbixin qaado haweeneyda ajnabi ah oo u baahan caawimaadaada. Taasi waxay kuu fududeyneysaa in aad raacdid talooyinka ay hayada bulshadu "Socialstyrelsen" soo jeediyeen.

### **Haweenka ka yimid Geeska Afrika**

- Ku dadaala inaad luuqadiina Swedishka kordhisataan.
- Ku dadaala sidii aad warbixin fiican uga qaadan lahaydeen Hab daaweynta Wadanka Swedhan iyo xarumaha hooyooyinka iyo meelaha lagu dhalo.
- Caadooyinkii iyo dhaqankii wanaagsanaa ee aad laheydeen mar walba guud ahaan lagama heli karo wadanka cusub ee aad timaadeen. Ku dadaala sidii aad ugala hadli laheydeen dhakhaatiirta iyo umulisooyinka fikradihiina ku saabsan habka ugu dhaliin wanaagsan haweenta uurka leh oo aad ku gaari kartaan khatar yari dhalmeed.
- Si wanaagsan oo joogto ah uga qeyb qaata siminaarada loo sameeyo haweenka uurka leh.

### **Madaxda arimaha caafimaadka iyo isbitaalada**

- Xarumaha caafimaad ee hooyooyinka iyo dhaliinka ee Sweden ilaa iyo hadda wey ku yar tahay cilmi ay u leeyihiin xili isbadalka uurka iyo foosha kooxdaas ajnabiga ah oo aan horey u soo qeexnay. Waa in la abuuraa hab tixraac ku saabsan haweenkan iyo sidii loo sameyn lahaa warbixin wanaagsan oo ku saabsan dadkan soo doontay xanaanada caafimaad taasoo loo gudbinayo rugaga caafimaadka ee haweenka iyo caruurta ee wadankan.
- Waa in aad baartaan waxyaalihii wanaagsanaa ee ka hir galay barnaamijka isdhexgalkan Swedhiska iyo ajnabiga.



- Baara habka uu isbitaalku u siiyo bukaansocodka tarjubaan.
- Raadiya oo howl galiya shaqaale caafimaad oo iyagu ka yimid geeska Afrika.
- Maal geliya daraasadaha iyo hab tixraacyada loo sameeyo wax ka qabashada maadadan taasoo looga baahan yahay wadanka gudahiisa.

## CONTRIBUTORS

My thanks to “Emilio Millennium” and “Adriana the Artist” for contributing to my life’s energy.

I want to thank all the Somali women— especially Asha Omar— for their cooperation. Their kind assistance may result in better perinatal outcomes for all mothers among new Swedish citizens.

Associate Professor Saemundur Gudmundsson, my tutor, has never wearied of giving me encouragement and the benefit of his very great knowledge of obstetrics.

Associate Professor Per-Olof Östergren, who has been my tutor since I was a medical student, has contributed to this dissertation in so many ways through informative discussions, constructive criticism, and unfailing patience in expanding my understanding of methodology. I have come to learn that a paper is good when P-O says it is good!

Professor Nils-Otto Sjöberg, Head of the Department of Obstetrics and Gynaecology, has been very generous in sharing his social network with me and always willing to listen to me and be of assistance.

Pelle Lindqvist, MD, PhD has given me many ideas, much valuable criticism, and courage to persevere.

Sara Johnsdotter, from her perspective as a social anthropologist, opened up new scientific dimensions to me, and guided my thinking along more culturally sensitive and insightful ways.

Associate Professor Jens Langhoff-Roos, Birgit Bödker, MD, and Professor Gorm Greisen have been my co-authors long before the bridge to Copenhagen was built.

My gratitude to Professor Birgitta Hovelius and Professor Jonathan Friedman for their co-authorship, and to Associate Professor Bertil Hanson, who did not live to see the completion of this work.

Associate Professors Elisabeth Persson (my ‘secret’ mentor), Lars Svanberg, and Sven Montan all supported the clinical research.

Associate Professors Ann-Charlotte Henningsson and Per Olofsson, and Professor Sven-Olof Isacson, read the articles and favoured me with their critical comments.

Marianne Persson has assisted me greatly with her excellent secretarial work, as has Eva Kroon.

My e-mail friends Teddy Primack and David Jalaho have provided me with excellent English linguistic revision and Somali translation.

My family and friends, and my colleagues at the Departments of Obstetrics and Gynaecology, and Community Medicine have all been a vital part of my social network.

Finally, thanks to Professor Magnus Westgren for constructive scientific discussions, linguistic revision and, above all, for giving me strength and courage.

*This study has been financially underwritten by grants from The Faculty of Medicine, Lund University, The University Hospital MAS, Malmö, The Community Council of Malmö, The Region Skåne, The Foundation for Health Research, The Foundations Samariten and The First of May Flower, Sweden.*

## REFERENCES

1. Liljestrand J. Reducing perinatal and maternal mortality in the world: the major challenges. *Br J Obstet Gynaecol* 1999;106(9):877-80.
2. Bayard-Burfield L. Migration and mental health. *Epidemiological studies of immigrants in Sweden [Dissertation]*. Malmö: Lund University; 1999.
3. Aurelius G. Sociomedical aspects of the integration of immigrant children in a Swedish county [Dissertation]. Huddinge: Huddinge University Hospital, Karolinska Institute; 1978.
4. Hjelm K. Migration, health and diabetes mellitus. *Studies comparing foreign- and Swedish-born diabetic subjects living in Sweden [Dissertation]*. Lund: Lund University; 1998.
5. Pearson M. Ethnic differences in infant health. *Arch Dis Child* 1991;66(1):88-90.
6. Hyman I, Dussault G. The effect of acculturation on low birthweight in immigrant women. *Can J Public Health* 1996;87(3):158-62.
7. Cobas JA, Balcazar H, Benin MB, Keith VM, Chong Y. Acculturation and low-birthweight infants among Latino women: a reanalysis of HHANES data with structural equation models. *Am J Public Health* 1996;86(3):394-6.
8. Sundquist J, Iglesias E, Isacson A. Migration and health. A study of Latin American refugees, their exile in Sweden and repatriation. *Scand J Prim Health Care* 1995;13(2):135-40.
9. Sundquist J, Johansson SE. The influence of exile and repatriation on mental and physical health. A population-based study. *Soc Psychiatry Psychiatr Epidemiol* 1996;31(1):21-8.
10. Bayard-Burfield L, Sundquist J, Johansson SE. Self-reported long-standing psychiatric illness as a predictor of premature all-cause

- mortality and violent death: a 14-year follow-up study of native Swedes and foreign-born migrants. *Soc Psychiatry Psychiatr Epidemiol* 1998;33(10):491-6.
11. Sundquist J. Living conditions and health. A population-based study of labour migrants and Latin American refugees in Sweden and those who were repatriated. *Scand J Prim Health Care* 1995;13(2):128-34.
  12. Johansson SE, Sundquist J. Unemployment is an important risk factor for suicide in contemporary Sweden: an 11-year follow-up study of a cross-sectional sample of 37,789 people. *Public Health* 1997;111(1):41-5.
  13. Rasmussen F, Oldenburg CE, Ericson A, Gunnarskog J. Preterm birth and low birthweight among children of Swedish and immigrant women between 1978 and 1990 [published erratum appears in *Paediatr Perinat Epidemiol* 1996 Apr;10(2):240-1]. *Paediatr Perinat Epidemiol* 1995;9(4):441-54.
  14. Mjones S, Kocturk TO. Growth, nutritional status and infant mortality of Turkish immigrant preschool children. *Scand J Prim Health Care* 1986;4(3):183-90.
  15. Smedby B, Ericson A. Perinatal mortality among children of immigrant mothers in Sweden. *Acta Paediatr Scand Suppl* 1979;275:41-6.
  16. Aurelius G, Ryde-Blomqvist E. Pregnancy and delivery among immigrants. *Scand J Soc Med* 1978;6(1):43-8.
  17. The Epidemiological Center. [Socioeconomical patterns and delivery outcome in Sweden]. Stockholm; 1996.
  18. Nordic Medico-Statistical C. [Health statistics in the Nordic countries 1993]. 1995.
  19. Berglund AC, Lindmark GC. Health services effects of a reduced routine programme for antenatal care. An area-based study. *Eur J Obstet Gynecol Reprod Biol* 1998;77(2):193-9.

20. World Health Organization. Revised 1990 estimates of maternal mortality. In: A new approach by WHO and UNICEF. [http://www.who.int/rht/pdf\\_files/rev\\_estimates\\_maternal\\_mortality.en.pdf](http://www.who.int/rht/pdf_files/rev_estimates_maternal_mortality.en.pdf) ed; 1996.
21. Paul BK. Maternal mortality in Africa: 1980-87. *Soc Sci Med* 1993;37(6):745-52.
22. Andersson T, Hogberg U, Bergstrom S. Community-based prevention of perinatal deaths: lessons from nineteenth-century Sweden. *Int J Epidemiol* 2000;29(3):542-8.
23. Rosenfield A, Maine D. Maternal mortality--a neglected tragedy. Where is the M in MCH? *Lancet* 1985;2(8446):83-5.
24. World Health Organization. Maternal Mortality: A global factbook. In: WHO, Genève: Offset Publication; 1991. pp. 217-19.
25. The Epidemiological Center. [Delivery outcome among immigrant women in Sweden]. Stockholm; 1998. Report No. 98;1.
26. The National Integration Office. [Participation for integration. Stimulating the integration process for the Somali speaking population in Sweden]. Norrköping: The National Integration Office; 1999. Report No. 99;4.
27. English PB, Kharrazi M, Guendelman S. Pregnancy outcomes and risk factors in Mexican Americans: the effect of language use and mother's birthplace. *Ethn Dis* 1997;7(3):229-40.
28. Brezinka C, Huter O, Busch G, Unus S. [Communication, compliance and perinatal risks of Turkish females in Tyrol]. *Geburtshilfe Frauenheil* 1989;49(5):472-6.
29. Campbell M, Abu Sham Z. Sudan: situational analysis of maternal health in Bara District, North Kordofan. *World Health Stat Q* 1995;48(1):60-6.
30. Toubia N. Female circumcision as a public health issue. *N Engl J Med* 1994;331(11):712-6.

31. Arbesman M, Kahler L, Buck GM. Assessment of the impact of female circumcision on the gynecological, genitourinary, and obstetrical health problems of women from Somalia: literature review and case series. *Women Health* 1993;20(3):27-42.
32. Baker CA, Gilson GJ, Vill MD, Curet LB. Female circumcision: obstetric issues [see comments]. *Am J Obstet Gynecol* 1993;169(6):1616-18.
33. Elchalal U, Ben-Ami B, Gillis R, Brzezinski A. Ritualistic female genital mutilation: current status and future outlook. *Obstet Gynecol Surv* 1997;52(10):643-51.
34. Omar M. Female circumcision and child mortality in urban Somalia. *Genus* 1991;47(3):203-23.
35. Lightfoot-Klein H, Shaw E. Special needs of ritually circumcised women patients. *J Obstet Gynecol Neonatal Nurs* 1991;20(2):102-7.
36. Hosken F. *The Hosken report: Genital and Sexual Mutilation of Females*. 4e. édition révisé ed. Lexington, MA: WIN News; 1993.
37. Abu-El-Futuh A, Shandall M. Circumcision and infibulation of females. A general consideration of the problem and a clinical study of the complications in Sudanese women. *S.M.M.J* 1967;5(4):178-212.
38. World Health Organization. *Female genital mutilation. An overview*. Genève: WHO Graphics; 1998.
39. Dirie MA, Lindmark G. The risk of medical complications after female circumcision. *East Afr Med J* 1992;69(9):479-82
40. Shell-Duncan B, Hernlund Y (eds). *Female circumcision in Africa: Dimensions of the practice and debates*. London: Lynner Rienner Publishers; 2000.
41. Berardi JC, Teillet JF, Godard J, Laloux V, Allane P, Franjou MH. [Obstetrical consequences of female circumcision. Study in 71

- circumcised African women]. *J Gynecol Obstet Biol Reprod (Paris)* 1985;14(6):743-6.
42. De Silva S. Obstetric sequelae of female circumcision. *Eur J Obstet Gynecol Reprod Biol* 1989;32(3):233-40.
  43. Johndotter S. Created by God: Female circumcision among Somalis in Swedish exile [Dissertation, manuscript]. Lund: Lund University; 2001.
  44. Sachs L. Fertility and birth in an unfamiliar environment: The case of Turkish migrant women in Sweden. *Ethnos* 1986;51:2-3.
  45. Sachs L. [Evil eye or bacteria. Turkish women and Swedish health care.] [Dissertation]. Stockholm: Stockholm University; 1983.
  46. Pattinson R, Makin J. Critical incident audit and feedback to improve perinatal and maternal mortality and morbidity (protocol for Cochrane Review). In: Oxford: Update Software, <http://www.update-software.com>. The Cochrane Library; 2001.
  47. Pattinson RC, Makin JD, Shaw A, Delpont SD. The value of incorporating avoidable factors into perinatal audits. *S Afr Med J* 1995;85(3):145-7.
  48. Campbell O, Cleland J, Collumbien M, Southwick K. Social science methods for research on reproductive health. Geneva: WHO/RHR/HRP/SOC/99.1; 1999.
  49. Richardus JH, Graafmans WC, van der Pal-de Bruin KM, Amelink-Verburg MP, Verloove-Vanhorick SP, Mackenbach JP. An European concerted action investigating the validity of perinatal mortality as an outcome indicator for the quality of antenatal and perinatal care. *J Perinat Med* 1997;25(4):313-24.
  50. Vintzileos AM, Campbell WA, Nochimson DJ, Weinbaum PJ. The use and misuse of the fetal biophysical profile. *Am J Obstet Gynecol* 1987;156(3):527-33.



51. Cnattingius S, Haglund B, Meirik O. Cigarette smoking as risk factor for late fetal and early neonatal death. *BMJ* 1988;297(6643):258-61.
52. Niswander K, Henson G, Elbourne D, Chalmers I, Redman C, Macfarlane A, et al. Adverse outcome of pregnancy and the quality of obstetric care. *Lancet* 1984;2(8407):827-31.
53. Langhoff-Roos J, Borch-Christensen H, Larsen S, Lindberg B, Wennergren M. Potentially avoidable perinatal deaths in Denmark and Sweden 1991. *Acta Obstet Gynecol Scand* 1996;75(9):820-5.
54. Georgsdottir I, Geirsson RT, Johannsson JH, Biering G, Snaedal G. Classification of perinatal and late neonatal deaths in Iceland. A survey from a defined population. *Acta Obstet Gynecol Scand* 1989;68(2):101-8.
55. Winbo IG, Serenius FH, Dahlquist GG, Kallen BA. NICE, a new cause of death classification for stillbirths and neonatal deaths. Neonatal and Intrauterine Death Classification according to Etiology. *Int J Epidemiol* 1998;27(3):499-504.
56. Marsal K, Persson PH, Larsen T, Lilja H, Selbing A, Sultan B. Intrauterine growth curves based on ultrasonically estimated foetal weights. *Acta Paediatr* 1996;85(7):843-8.
57. Langhoff-Roos J, Larsen S, Basys V, Lindmark G, Badokynote M. Potentially avoidable perinatal deaths in Denmark, Sweden and Lithuania as classified by the Nordic-Baltic classification. *Br J Obstet Gynaecol* 1998;105(11):1189-94.
58. Omar M. Womens health in rural Somalia [Dissertation]. Umeå: Department of Epidemiology and Public Health, Umeå University, Sweden; 1994.
59. Kassamali N. When modernity confronts traditional practices: female genital cutting in Northeast Africa. In: Bodman L, Tohidi N, editors. *Women in Muslim Societies*. London: Lyenne Rienner Publishers; 1998, pp.39-61.

60. Hogberg U, Wall S, Wiklund DE. Perinatal mortality in a Swedish county 1980-1984. Mortality pattern and its amenability. *Acta Obstet Gynecol Scand* 1990;69(7-8):567-73.
61. Press F, Katz M, Leiberman JR, Shoham I, Glezerman M. Obstetric performance in Ethiopian immigrants compared with Israeli parturients. *Isr J Med Sci* 1993;29(6-7):403-7.
62. Andersen KV, Hermann N, Gjorup T. Perinatal audit. Are experts biased by knowledge of outcome? A controlled study. *Dan Med Bull* 1992;39(2):197-9.
63. Bakketeig LS. Introduction to perinatal audit. *J Perinat Med* 1991;19(Suppl 1):107-10.
64. Albers LL, Schiff M, Gorwoda JG. The length of active labor in normal pregnancies. *Obstet Gynecol* 1996;87(3):355-9.
65. Duignan NM, Studd JW, Hughes AO. Characteristics of normal labour in different racial groups. *Br J Obstet Gynaecol* 1975;82(8):593-601.
66. Kirby JP. The Islamic dialogue with African traditional religion: divination and health care. *Soc Sci Med* 1993;36(3):237-47.
67. Beine K, Fullerton J, Palinkas L, Anders B. Conceptions of prenatal care among Somali women in San Diego. *J Nurse Midwifery* 1995;40(4):376-81.
68. Bruun Nielsen B. To deliver a small baby is easy, but to save a small baby is difficult. Community studies on antenatal care in rural Tamil Nadu, South India [Dissertation]. Aarhus: Aarhus University, Denmark; 1998.
69. Andersson R, Bergstrom S. Maternal nutrition and socio-economic status as determinants of birthweight in chronically malnourished African women. *Trop Med Int Health* 1997;2(11):1080-7.
70. Mathews F, Yudkin P, Neil A. Influence of maternal nutrition on outcome of pregnancy: prospective cohort study [see comments]. *BMJ* 1999;319(7206):339-43.

71. Mitchell J, Mackerras D. The traditional humoral food habits of pregnant Vietnamese-Australian women and their effect on birth weight. *Aust J Public Health* 1995;19(6):629-33.
72. Gregory PB, Rush D. Iatrogenic caloric restriction in pregnancy and birthweight. *Am J Perinatol* 1987;4(4):365-71.
73. Clausson B. Risk factors and adverse pregnancy outcomes in small-for-gestational-age births [Dissertation]. Uppsala: Uppsala University; 2000.
74. Cnattingius S, Haglund B, Kramer MS. Differences in late fetal death rates in association with determinants of small for gestational age fetuses: population based cohort study. *BMJ* 1998;316(7143):1483-7.
75. Clausson B, Cnattingius S, Axelsson O. Preterm and term births of small for gestational age infants: a population-based study of risk factors among nulliparous women. *Br J Obstet Gynaecol* 1998;105(9):1011-17.
76. Persson PH, Weldner BM. Intra-uterine weight curves obtained by ultrasound. *Acta Obstet Gynecol Scand* 1986;65(2):169-73.
77. Barker D, editor. Fetal and infant origins of adult disease. London: British Medical Journal; 1992.
78. Emanuel I, Hale CB, Berg CJ. Poor birth outcomes of American black women: an alternative explanation. *J Public Health Policy* 1989;10(3):299-308.
79. Barker DJ, Gluckman PD, Godfrey KM, Harding JE, Owens JA, Robinson JS. Fetal nutrition and cardiovascular disease in adult life. *Lancet* 1993;341(8850):938-41.
80. Gardosi J, Chang A, Kalyan B, Sahota D, Symonds EM. Customised antenatal growth charts. *Lancet* 1992;339(8788):283-7.
81. Brooke OG, Brown IR, Bone CD, Carter ND, Cleeve HJ, Maxwell JD, et al. Vitamin D supplements in pregnant Asian

- women: effects on calcium status and fetal growth. *Br Med J* 1980;280(6216):751-4.
82. Brunvand L, Haug E. Vitamin D deficiency amongst Pakistani women in Oslo. *Acta Obstet Gynecol Scand* 1993;72(4):264-8.
  83. Henriksen C, Brunvand L, Stoltenberg C, Trygg K, Haug E, Pedersen JI. Diet and vitamin D status among pregnant Pakistani women in Oslo. *Eur J Clin Nutr* 1995;49(3):211-8.
  84. Marya RK, Rathee S, Dua V, Sangwan K. Effect of vitamin D supplementation during pregnancy on foetal growth. *Indian J Med Res* 1988;88:488-92.
  85. Sparks J, I C. *Intrauterine growth and nutrition: Philadelphia: Saunders; 1992.*
  86. Abdul Ghani N, Eriksson M, Kristiansson B, Qirbi A. The influence of khat-chewing on birth-weight in full-term infants. *Soc Sci Med* 1987;24(7):625-7.
  87. Eriksson M, Ghani N, Kristiansson B. Khat-chewing during pregnancy-effect upon the off-spring and some characteristics of the chewers. *East Afr Med J* 1991;68(2):106-11.
  88. Alem A, Kebede D, Kullgren G. The prevalence and socio-demographic correlates of khat chewing in Butajira, Ethiopia. *Acta Psychiatr Scand Suppl* 1999;397:84-91.
  89. al-Meshal IA, Qureshi S, Ageel AM, Tariq M. The toxicity of *Catha edulis* (khat) in mice. *J Subst Abuse* 1991;3(1):107-15.
  90. Islam M, al-Shabanah O, al-Harbi M, al-Gharably NM. Evaluation of teratogenic potential of khat (*Catha edulis*) in rats. *Drug Chem Toxicol* 1994;17(1):51-68.
  91. Dejin-Karlsson E, Hanson BS, Ostergren PO, Lindgren A, Sjoberg NO, Marsal K. Association of a lack of psychosocial resources and the risk of giving birth to small for gestational age infants: a stress hypothesis. *Br J Obstet Gynaecol* 2000;107(1):89-100.

92. Jordan V, Grebe SK, Cooke RR, Ford HC, Larsen PD, Stone PR, et al. Acidic isoforms of chorionic gonadotrophin in European and Samoan women are associated with hyperemesis gravidarum and may be thyrotrophic. *Clin Endocrinol (Oxf)* 1999;50(5):619-27.
93. Zeitlin J, Combier E, De Caunes F, Papiernik E. Socio-demographic risk factors for perinatal mortality. A study of perinatal mortality in the French district of Seine-Saint-Denis. *Acta Obstet Gynecol Scand* 1998;77(8):826-35.
94. Jeppesen EZ. [Obstetric health care offered to Turkish immigrant women—a quality assessment]. *Ugeskr Laeger* 1993;155(47):3849-54.
95. Vangen S, Stoltenberg C, Stray-Pedersen B. Complaints and complications in pregnancy: a study of ethnic Norwegian and ethnic Pakistani women in Oslo. *Ethn Health* 1999;4(1-2):19-28.
96. Nordstrom L, Spetz E, Wallstrom K, Walinder O. Metabolic control and pregnancy outcome among women with insulin-dependent diabetes mellitus. A twelve-year follow-up in the country of Jamtland, Sweden. *Acta Obstet Gynecol Scand* 1998;77(3):284-9.
97. Clausson B, Cnattingius S, Axelsson O. Outcomes of post-term births: the role of fetal growth restriction and malformations. *Obstet Gynecol* 1999;94(5 Pt 1):758-62.
98. Stoltenberg C, Magnus P, Lie RT, Daltveit AK, Irgens LM. Influence of consanguinity and maternal education on risk of stillbirth and infant death in Norway, 1967-1993. *Am J Epidemiol* 1998;148(5):452-9.
99. Bunday S, Alam H. A five-year prospective study of the health of children in different ethnic groups, with particular reference to the effect of inbreeding. *Eur J Hum Genet* 1993;1(3):206-19.
100. Ahlenius I, Thomassen P. The changing panorama of late fetal death in Sweden between 1984 and 1991. *Acta Obstet Gynecol Scand* 1999;78(5):408-14.

101. Vangen S, Stoltenberg C, Skrondal A, Magnus P, Stray-Pedersen B. Cesarean section among immigrants in Norway. *Acta Obstet Gynecol Scand* 2000;79(7):553-8.

