ORIGINAL PAPER

Migrants' Newborns Characteristics in a Neonatal Intensive Care Unit (NICU) in Greece

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Abstract

Background: In Greece live large numbers of migrant women at reproductive age, originate from 215 different countries. They show higher fertility rates and may experience higher risk of preterm birth. Their needs for antenatal and postpartum services have not been very well studied.

Objectives: To investigate epidemiological characteristics of immigrant newborns in comparison with those of Greek origin, aiming at identifying key areas for future intervention strategies.

Methodology: The reference population was 484 offsprings (Greeks 47.7%, migrants 52.3%) who were born in a public maternity hospital in Athens, from 1/1-30/6/2008 and referred to its NICU, according to migrant status, gestation age, birth weight, mode of delivery, diagnosis and length of stay. We used SPSS 17.0, descriptive techniques and x^2 independence test.

Results: A x^2 independence test indicated that the two variables, nationality and mode of delivery are not independent (the test was found statistically significant x^2=23.13, df=2, p=0.000). Women of Greek origin experience an increased rate of caesarian deliveries

(a) x^2 independence test between nationality and birth weight (x^2=0.92, df= 4, p=0.92), nationality and gestation age (x^2=3.06 df= 4 p=0.55), nationality and length of stay in NICU (x^2=0.74 df=2 p=0.70), wasn't able to reject the independence of the variables above when tested in pairs
(b) regression analysis did not reveal a statistical significant correlation between nationality, gender, gestation age and mode of delivery with congenital disorders and perinatal infections (p>0.05)

Conclusions: Policies should target the reorganization of maternal care in the country, the dissemination of relevant information and the empowering of migrant women. Publication of leaflets in minority languages with health information patient rights and recruitment of mediators are needed. Attending Greek language courses would help their inclusion in the society. Furthermore, education and training of health professionals on caring for users with cultural differences is an urgent matter.

Key words: neonatal morbidity, migrants, epidemiological characteristics, NICU, health services provision

Introduction

Fertility rates are decreasing in almost all European Union countries, and this affects population size, while at the same time higher numbers of premature births occur. Ethnic, racial and immigrant background women are in greater risk of preterm and low for gestational age deliveries (Cacciani et al., 2011) and genetic disorders and congenital anomaly rates are higher (Behrman & Stith Butler, 2007). The Office for National Statistics UK (2009), reported low birth weight, preterm delivery, multiple births, mother under age 20 marital status, social class and ethnicity as risk factors of neonatal mortality. A meta-analysis of 23 studies by Gagnon et al., (2009) found Asian and sub-Saharan African migrants at greater risk of preterm birth, while the Asian, North and sub-Saharan African migrants were at greater risk of faeto-infant mortality than the majority population.

In striving to save as many neonates lives as possible, the organisation and provision of maternal health services, has been a major public health policy issue for many governments.

In Greece, live a large number of migrants since ‘90s. A large proportion of women at reproductive age consist. Migrant female population shows higher fertility rates and may experience higher risk of preterm birth (Rowland, Hogue & Vasquez, 2002). They have increased needs for respective services both during antenatal and postpartum period (Kotsioni, 2009). Their needs for antenatal and postpartum services have not been very well studied. To organize and provide the appropriate services relevant studies on their needs should be conducted.

As neonatal morbidity and mortality indicators, can capture socio-economic background and the level of health care services in a country, we investigated the morbidity of infants in relation to ethnicity in order to identify key areas for future intervention strategies. Our purpose was to identify migrant women reproductive age health service needs, based on newborns morbidity patterns, in support of improvements in maternal health. We examined whether and how newborns of immigrants have different health needs than those of the Greek origin, and should merit special attention and different treatment by health professionals, and more comprehensive health services.

Research questions and hypothesis

The main hypothesis is that ethnic and racial minority women relate to an increased need of maternal services

Migrants in Greece

Greece had traditionally been a migrant exporting country until the '90s. Then it became migrant receiving country due to a number of factors such as the major geopolitical changes that occurred both in Europe and other continents, such as the collapse of the Soviet Union, the war in Yugoslavia and other regions. Furthermore the fact that Greece was the only member of the European Union and at the same time lies at the outermost borders of the European Union having an extensive line of unguarded see borders, made it easy for legal and illegal migrants to enter its territory.

In 2001 census, when Hellenic Statistical Authority (EL.STAT.), included ethnicity for the first time in the questioners, 761, 813 migrants (7% of the total Greek population) were documented. Of this population 57% is of Albanian origin, followed by Bulgarians (35,000 people), Georgians, Russians and Romanians (by 20.000 people respectively), and Ukrainians, Pakistanis and Indians (by 10, 000 people respectively). Of all migrants 10% live in Athens area (Kapsalis 2003).

It took the government some time to react as a host county and respond with the appropriate policy for their inclusion.

Since 1999 an Interministerial Committee as well as several initiatives on introducing integration policies and access to care were established with limited success due to bureaucracy and fragmentation. Integration policies were not high on the political agenda until 2001, when Law 2910/01 amended in 2005 Law 3386/05 on regulating “entrance, residency and integration of third country nationals in the Hellenic Republic” were

voted. Ministerial Decrees established a comprehensive integration policy for migrants and other vulnerable groups. However, policies on undocumented migrants remain still in question (European Commission, 2008).

Migrants in Greece come from 215 countries. In terms of demographic profile, a research published by the Hellenic Statistical Authority in 2009 on migrants and their employment status, found lower educational status than the native population (54% have completed primary and 34.7% secondary education). The vast majority of them were employed as unskilled workers, in constructions 36%, in agriculture (19.8%) and self-employment (13.8%). In terms of social insurance, they and family members are covered by the respective insurance fund (IKA 11.7%, OGA and OAEE 13.7% respectively) (IKA 2005).

They stated as the main reasons for having left their countries of origin: work opportunities (61.6%) family reconciliation (19.3%), while 8.4% declared force (e.g., war, persecution). Moreover they wish to permanently settle in the country 46.6% or stay more than five years 23.4%, while 56.3% do not believe that attending Greek language courses will help find a job.

Those migrants, who legally live in the country, are entitled to the full range of health services as the native population.

So far, in Greece, the state of migrants' health remains under researched and the need for health services has not been systematically documented. There is a lack of epidemiological reports and the National Information System is currently under construction.

We know that prevalence of infectious diseases, such as hepatitis B, and C (Roussos et al., 2001; Zacharakis et al., 2007; Pantazis et al., 2008), HIV (Nikolopoulos et al., 2005) and TB (Constantinides et al., 2000; Kanavaki et al., 2005), are higher in immigrants than in native population, and so as TB multi resistance agents (Kanavaki et al., 2007). They face an increased risk for occupational diseases and injuries due to the nature of their work (10.56 accidents in immigrants vs 6.99 accidents in natives per 1000 employees) (IKA 2005). Emke-Poulopoulos (2001) referred to the victims of trafficking with a focus on mental and physical health and the increased risk of HIV/AIDS, STIs and unwanted pregnancies. In terms of mental health, migrants suffer from higher rates of stress that may lead to depression and discouragement (Papavasileiou, 2005). With regards to children, one review found increased rates of hospitalization of those with Albanian origin due to hepatitis B and thalassemia in 1990-1995 (Galanakis et al., 1998).

Research based on EU-SILC 2003 (Maratou-Alipranti & Gazon, 2005) found that migrants reported higher rates of very good health 80.4% in comparison with Greeks 65.4%, as expected since they are of a younger population. Greeks needed and used health services (hospital or health centre) more often 45.7% than migrants 31.3% while 3.9% of the latter wanted but could not afford to pay for such services. Households with children used more health services, as expected

With regards to illegal migrants, who according to the Ministry of Interior are estimated, to about 1,000,000 people in 2010, may get services at the emergency departments of hospitals with the National Health System for free. Besides hospitals there are several NGOs, the vast majority of them receives funding from the MoH that provide primary health services, pharmaceuticals and laboratory exams to them. These expenses are paid by the tax-payers (Kotsioni, 2009). A study by Kazazaki (2011), on health services use by illegal migrants in the Region of Aegean Sea Islands found considerable rates of hospitalization; users were younger with Asian background and mainly from Afghanistan. She also found, higher rates of hospitalization among children and women of reproductive age.

For the needs of this study, a woman with migrant origin is a person who has residency in Greece and whose mother tongue is other than Greek, and her country of birth is other than Greece

Maternal services

In 2008, live births in the country amounted to 118,302, of which about 20,000 births (17%) come from mothers of migrant origin.

Migrant women, who live in the country, are a highly diverse ethnical group (215 countries), exercising increased fertility rate.
A research by Kotzamanis & Sofianopoulou, (2008), showed that migrant women amounted to 45% of the total migrant population. The vast majority of them is in reproductive age and influences the fertility and the number of live births in the country. They give birth at an earlier age 26.48 years (migrants) vs 30.52 years (Greek) respectively and to more children. Fertility ratio is 2.21 per migrant woman vs 1.20 per Greek woman. This contributes to a positive net natural increase of the population. Undocumented pregnant women or with no eligibility status may get the respective maternal services and laboratory tests in out-patients departments of public hospitals, health centres and NGOs and give birth in a public hospital for free as in case of an emergency undocumented migrants are not referred to the police L3386/05. However the demand of maternal and antenatal services has not been documented and inequalities in access and responsiveness still exist. Attempts for planning such services are emerging, especially due to the economic situation in the country. Successful interventions need to take into consideration several social, psychological, cultural, and biological factors in caring for them during pregnancy and labour (Malin & Gissler, 2009).
In Athens area where half of the population lives, the two regional public maternity hospitals belonging to the National Health System, have an annual birth turnover of about 14,000. These both operate Neonatal Intensive Units (NICUs), staffed with the right numbers of skilled health professionals and highly equipped with biomedical technology,

Material and Methods

The study refers to "Elena Venizelou, Maternity Hospital." In this infrastructure 8,000 to 9,000 births per year (around 7% of total births in the country) take place. The design of the study refers to offsprings who were born in the above hospital and transferred to its NICU for intensive care. The choice of this hospital was made because of the higher birth turnover, and thus can capture a wider ethnic and racial diversities sample. This hospital exercises the rooming in system and operates an out- patient department for high risk neonates. Furthermore, they established Breastfeeding Bank and Breastfeeding Promotion Unit in support of mother and child.
The reference population was 507 newborns born in the above infrastructure. We selected 484 neonates (47.7% of Greek and 52.3% of migrant origin) and excluded 23 neonates transferred to NICU of other hospital. Table 1 shows the characteristics of the reference population.

Table 1. Neonatal characteristics according to nationality

	Greeks (n=231)	Migrants (n=253)
Mean Gestation Age (weeks)	35.8	35.9
Gestation Age	(%)	(%)
<28	3.9	5.1
28-31	4.3	4.0
32-33	15.2	10.7
34-36	30.3	28.9
>36	46.3	51.4
Mean Birth Weight (grams)	2,637	2,763
Birth weight	(%)	(%)
<1000	3.8	3.8
1000-1500	5.0	4.2
1501-2000	11.2	9.5
2001-2500	20.0	18.9
>2500	60.0	63.6
Mode of Delivery		
Normal	52.5	73.5
Caesarean	43.9	23.9
Instrumental	3.5	2.6
Length of stay NICU (days)	14.0	12.2
0-6 days	39.0	36.9
7-27	50.5	54.4
28-365	10.5	8.7
Diagnosis		
Genetic disorders	41.7	58.2
Perinatal infections	37.7	62.3

The study period was 1/1-30/6/2008. The protocol was approved by the Hospital Board. Our source was the birth records of the neonatal intensive care unit. These records are

kept manually so we needed to visit the maternity hospital three times to collect all the data. In the study, all preterm newborns and term newborns that were admitted in the Neonatal Intensive Care Unit of the above establishment were included. The exposure variable was immigrant status as identified by mother's country of birth. In terms of gestational age we identified the following categories according to the European Foundation for the care of newborn infants (2010), extremely preterm, <28 weeks, very preterm 28-31weeks, moderately preterm 32-33weeks, late preterm 34-36 weeks, 37+ term births. With regards to birth weight we identified the following categories <1000 grams, 1000-1500 grams, 1501-2000 grams, 2001-2500 grams and >2500 grams (WHO, 2006), and mode of delivery (normal, caesarean or instrumental).

Furthermore we included multiple births, and in hospital deaths, because the latter is considered as a proxy of intensive care. Moreover, length of stay in NICU, birth defects, and perinatal infections were included, as these categories are the main causes of neonatal and infant morbidity and mortality. The choice of the above mentioned covariates was primarily based on the existing literature.

Statistical analysis

We used SPSS 17.0, descriptive techniques and x^2 independence test, to investigate differences between Greek and migrants newborns in terms of gestation age, birth weight, mode of delivery and length of stay in NICU (Apostolakis et al., 2003; Apostolakis & Stamouli 2007; Apostolakis et al 2009).

We run regression analysis to examine correlations between nationality, gender, gestation age and mode of delivery with congenital disorders and perinatal infections.

Results

The analysis showed that caesarean sections were significantly higher to natives compared to migrants. The two variables, nationality and mode of delivery were not independent. The test was statistically significant $x^2=23.1$, df=2, p=0.00). Time trends in the country show an increase rate of caesarians, and this should be further investigated in connection with maternal epidemiological characteristics. In terms of cost, women of Greek origin bare the financial cost for caesarians with out-of-pocket payments, which only partially covered by the insurance funds

Investigating birth weight, migrant newborns scores were higher in >2500, 2001-2500 and <1000 grams. x^2 independence test between nationality and birth weight ($x^2=0.92$, df= 4, p=0.92), wasn't able to reject the independence of the variables when tested in pairs.

In terms of gestation age migrants presented higher scores than their Greek counterparts in 37+ and <28 weeks respectively. $x^2=3.06$ df= 4 p=0.55 was not able to reject the independence of the variables when tested in pairs

With regards to length of stay in NICU Greek offsprings stayed longer ($x^2=0.74$ df=2 p=0.70), wasn't able to reject the independence of the variables when tested in pairs

We then run a regression analysis to examine correlations of newborns characteristics with nationality. We did not found a statistical significant correlation between nationality, gender, gestation age and mode of delivery with congenital disorders and perinatal infections (p>0.05)

Discussion

Neonatal mortality in Greece decreased remarkably during the period 1970-2002 from 19.63 per 1000 live births to 3.50 per 1000 live births. This resulted from a comprehensive family planning policy that included stewardship, resource generation, financial and service provision measures, such as obligatory pre-marriage health certificate, establishment of maternal and child health centres, in the local level, free antenatal and postnatal health and social care, establishment of prenatal reference screening centres coupled with high level of obstetric care and the establishment of NICUs at regional hospitals, staffed with the right numbers of skilled professionals and fully equipped. This pro-mother and child policy has been compromised in the subsequent years because a number of the above

initiatives are no longer implemented or close down such as most of the maternal and child centres. Thus remain with the woman of reproductive age to act as an informed agent in seeking promotion services bearing the financial cost (Andrioti & Roumelioti 2007).

However, this is not the case for marginalized groups. Migrants are most disadvantaged among the vulnerable groups not only because their fragile situation in the receiving country but also because they carry the health background of their country of origin. In the host country they may feel insecure, uncertainty about their future, marginalization and social exclusion that affect their mental and physical health. They may experience ill-health and worse health indicators than the native population (Davies et al., 2009; Zimmerman et al., 2011).

These may be attributed to their socioeconomic status coupled with lack of information on health services or barriers to access in the host country (Smith et al., 2010). Marmot et al. (2010) found that inequalities in the early stages of life contribute to wider inequalities later in life by feeding a vicious circle of ill-health poverty and unemployment.

Even in countries with long tradition in multicultural societies such as the USA (Harper et al., 2003) UK (Jayaweera 2010), Canada (Health Council of Canada, 2011) health gaps still persist (Braveman et al., 2001).

A policy framework of the appropriate health and social services may prevent ill-health. Given the financial constrains this should be efficient and cost-effective contributing to their inclusion in the society. It requires the knowledge and understanding of their specific needs in terms of planning and provision of the respective services. WHO evidence based model of interventions can help to this direction. It includes screening for congenital disorders (infectious diseases such as HIV, hepatitis B, syphilis, and rubella) and genetic disorders (Banta, 2003; Di Mario, 2005; Tinker et al.,2005). This package should expand to include free screening for Down syndrome, due to motherhood later in life in the native population and thalassemia, endemic issue in some countries.

Approaches to reducing health disparities should address simultaneously structural barriers that prevent these groups from taking advantage of those resources to improve the health of their families and the lack of informed decisions (Bryant et al., 2009) in matching their linguistic, social, religious, legal and cultural diversities. We need to understand patterns of birth outcomes within the heterogeneous and growing migrant communities (Jayaweera 2010)

In this study, increased rates of caesareans observed with Greek women. Caesarean sections as potential quality measure of obstetric services should be further studied as they are very high in our country compared with the normal delivery rates. Increased caesarean rates might mask other issues in women health. The vast majority of clients in the above public hospital are of lower socioeconomic status, this may explain why migrant newborn scores in most of the variables were better than their Greek counterparts. A representative sample however from all over the country might have revealed stronger connections with the variables.

This survey showed 7.4% of live births needed hospitalization in NICU due to congenital anomalies, genetic disorders and prematurity.

Athough correlations between (a) morbidity of the Greek newborns in comparison to immigrants were not documented; the socioeconomic profile of immigrants should be investigated to identify the causes and conditions for higher morbidity due to infectious diseases and genetic factors in neonates of the second category

Increased prevalence of hepatitis, tuberculosis and other infections among pregnant women of migrant origin should be taken into consideration. Infectious diseases may cause congenital malformations while forced marriages among relatives in the migrant populations might be a reason for genetic disorders. Both of these disorders are interrelated with behavioural, environmental and psychosocial contributors (Nepomnyachy, 2009). Because some of them are modifiable a comprehensive maternal health policy should by in place (Martines et

al. 2005). Family planning policies and guidelines for antenatal care, underlining the adverse effects of antenatal care late start, insufficient attendance, delayed or failure in notification of obstetrical problems will contribute to decrease preterm births and lead to improvements of women health (Knippenberg et al. 2005).

Health systems need to put more efforts in offering universal access and equality. We need to identify the demand and the characteristics of the respective ethnic groups. Migrant women may lack of information on existing services, eligibility and obligations, exercise weak communication with health workforce on describing their symptoms. Furthermore they may face different perceptions and beliefs by the health professionals who are not trained to accommodate them. Therefore, a comprehensive policy for the protection and social inclusion of migrants and vulnerable groups should be urgently implemented in fighting discrepancies.

Targeted epidemiological research in identifying migrants' profile and health status is a necessity. Due to extended diversities in the migrant female population we should analyse their specific characteristics, country of origin together with the socioeconomic profile (religion, residency status, integration level, behaviours and beliefs) and demand for maternal care. The development of the National Health Information System will help a lot in this direction.

Policies may include the reorganization of maternal care in the country, introduction of evidence based guidelines for screening, delivery and post partum period. Train health professionals and increased access to maternal services. A basic package for antenatal care covered by the insurance funds for eligible patients or the state budget for the rest should be introduced. Dissemination of relevant information and empowering migrant women to use such services, should be apriority. To this direction the formulation and publication of leaflets in major languages of migrants such as Albanian, Russian, and English on information and patient rights would be helpful. The establishment of relevant services in the local level in their support, and the recruitment of mediators are needed. Attending Greek language courses would help their inclusion in the society. Furthermore education and training of health professionals on caring for users with cultural differences is an urgent matter. Monitor the implementation of the guidelines and catalysing the cooperation among all resource stakeholders, should primarily be undertaken.

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