ORIGINAL ARTICLE

Referral pattern of emergencies in obstetrics: Implications for defining scope of services and policy

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Abstract

Objective: To analyse referral pattern of high-risk obstetric cases from secondary to tertiary care hospitals and to assess their maternal and neonatal outcomes.

Methods: This retrospective study was conducted at the Aga Khan University Hospital, Karachi, and comprised all referred obstetric cases from secondary-level hospitals to tertiary-level care within and outside the Hospital between January 2011 and December 2014. Day and time of referral, reason for referral as well as maternal and neonatal outcomes were collected. SPSS 19 was used for data analysis.

Results: Of the 634 obstetric referrals, 279(44%) patients were referred to the study site, while 355(56%) sought care in other hospitals. Of those patients who were referred to the AKUH, medical records of 195(69.9%) were available for review. The mean age of the participants was 28±4.7 years. Obstetric complications led to 122(61%) referrals. The top three reasons among these were pregnancy-induced hypertension, preterm labour and foetal causes. Medical causes such as viral infections were the cause of 50(27%) referrals. Moreover, 177(91%) patients were pregnant at the time of referral and the remaining 18(9%) were referred after delivery. Of the pregnant women, 133(75%) delivered at the study site. Caesarean section was the mode in 92(69%) deliveries. There was 1(0.75%) maternal death due to puerperal sepsis while 9(7%) neonatal deaths were recorded.

Conclusion: The most common reason for referrals was obstetric indications. Moreover, a quarter of referrals were initiated due to medical conditions, most of which were due to infections.

Keywords: Health care systems, Obstetrics, Referral. (JPMA 66: 1606; 2016)

Introduction

Maternal mortality is an important indicator of a nation's development and has been the focus of attention for public health since 1980s. The Safe Motherhood Initiative by the World Health Organisation (WHO) in 1987 identified a few strategies to reduce these deaths which included family planning access, access to antenatal care and trained birth attendants along with the importance of emergency obstetric care.[1] In 2000, the United Nations Millennium Development Goals (MDGs) listed reductions in maternal mortality ratio (MMR) as one of its eight goals.[2] In 2005, the WHO report on "Make every mother every child count" highlighted the importance of continuum of care from pre-pregnancy to childhood and led to the formation of Partnership for Maternal, Newborn and Child Health (PMNCH).[3]

Despite all these efforts, the reductions in maternal mortality have been far from satisfactory. The annualised decline of MMR from 1990 to 2013 has been 1.3% globally (3.1% for developed countries while only 1.4% for developing countries).[4] Pakistan lags behind significantly with 0.3% decrease in MMR from 1990 to 2013, with 17,000 maternal deaths reported in 2013 alone.[4] Similarly, neonatal mortality decline in Pakistan ranges between 1-2% per year (against MDG target of 4.4% per year) over the past two decades.[5]

Abortion, maternal haemorrhage and hypertensive disorders of pregnancy account for 50% of all maternal deaths.[4] Besides these direct causes, indirect causes that may be exacerbated during pregnancy account for approximately 25% of maternal deaths.[6] All of these potential causes require emergency referral and obstetric and/or medical care to help save precious maternal and neonatal lives.

Evidence clearly suggests that antenatal care and skilled delivery alone may not have a significant impact on MMR.[7] On the other hand, ensuring that all births take place at a health facility also does not guarantee that the MMR will be reduced.[8] This is likely to be true for countries such as Pakistan where health facilities may not be well equipped or adequately staffed.[9] Safe motherhood strategies clearly emphasise the need for timely referral by frontline maternity care providers and appropriate hospital care.[8]

The Pakistan Demographic and Health Survey (PDHS)

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2012-13 reported that 75% of women received antenatal care at least once during the pregnancy. It also reported that 48% of births took place at a health facility while only 52% of births were attended by a skilled birth attendant.[10] Since 50% of the births take place at home with unskilled care providers, frontline maternity workers in the community need to be well trained to recognise high-risk obstetric cases and refer them accordingly.[8]

The formal health system in Pakistan is broadly categorised into the public and private sectors. The public sector is subdivided into three layers: the first-level care facilities include basic health units (BHUs), rural health centres (RHCs) and dispensaries; the secondary-level facilities include tehsil headquarters (THQs); and tertiary-level facilities include teaching hospitals.[9] The private health sector, which serves nearly 70% of the population, is primarily a fee-for-service system and offers health care provision ranging from trained allopathic physicians to faith healers operating in the informal private sector.[11]

Referrals of patients from basic to higher levels of care are an important part of allopathic health systems. The three-delay model provides a conceptual framework of factors that prevent timely access to emergency care.[12] These include delay in the decision to seek care, delay in arrival at a health facility and delay in provision of adequate care.[12] A well-functioning referral system should aim at reducing the second delay and provide effective treatment at minimum cost.[13] However, there are several factors that may adversely affect the referral process. These include arrangement of transport, geographical access to a health facility and the out-of-pocket payments which may hinder a family from accepting the referral.[14]

Despite all the various forms of health services, the health indicators of Pakistan are far from satisfactory. A formal referral chain to secondary and tertiary facilities for high-risk cases is non-existent in Pakistan.[15] Tertiary care institutions are mainly located in major cities and the bulk of patients are self-referred.[15] This results in overcrowding and poor quality of care that is available to the woman in need. Defining a framework and process for obstetric referrals may lead to reduction of maternal mortality and morbidity.

The current study was planned to analyse referral pattern of high-risk obstetric cases from secondary to tertiary level hospitals in Karachi and to assess their maternal and neonatal outcomes.

Materials and Methods

This retrospective study was conducted at the Aga Khan University Hospital (AKUH), Karachi, and comprised all referred obstetric cases from secondary-level hospitals (SLH) to tertiary level within and outside the AKUH from January 2011 to December 2014. Data was obtained as part of an ongoing monitoring process to ensure quality of care of obstetric cases referred from SLH to the AKUH, a philanthropic, not-for-profit, 600-bed private teaching institution established in 1985. Besides its main campus, the AKUH has four SLH, which were legally integrated in 2010 to develop an integrated health system to ensure provision of cost-effective, quality health care to the community at large. The SLH consists of three hospitals located in Karachi (in Kharadar, Garden and Karimabad) and one in Hyderabad. All the three Karachi campuses have 40-50 beds and provide maternal and child health services to the community. They are all situated at a 20- to 30-minute drive from the main campus. The Hyderabad campus, 160 kilometres from Karachi, has 87 beds and is located at a 2-hour drive from the main campus.[16]

Since this study was a record review, exemption was obtained from the institutional ethical review committee (ERC).

All high-risk obstetric cases referred from SLH to tertiary level facility during the 4-year study period were included. Once a need for referral was identified at the SLH, the patients were informed that they needed to be shifted to a higher-level health facility for care. Patients made the decision for the hospital they wanted to be treated. Detailed data was not available for the cases referred to a health facility outside AKUH. The analysis regarding causes of referral and maternal/neonatal outcomes was conducted for those who were referred within the AKUH system. This information included reason for referral, which was obtained from the documentation made by the attending physician in the patients' medical folder, day of referral, time of referral, and maternal and neonatal outcomes.

SPSS 19 was used for data analysis. Data included frequencies and proportions of referral causes, day and time of referral, as well as maternal and neonatal outcomes.

Results

Of the 634 obstetric referrals from the four SLH, 279(44%) patients were referred to the AKUH while 355(56%) sought care in other hospitals.

The referral rate of obstetric cases was 716 out of 42718 cases (1.7%) (Table-1).

Moreover, 422(66%) patients were referred during

Table-1: Obstetric referral rate.

Year	Total number of deliveries at the secondary hospitals	Total number of referrals within or outside AKU	Referral rate
2011	9,879	109	1.1%
2012	10,412	191	1.8%
2013	10,914	184	1.7%
2014	11,513	150	1.3%

AKU: Aga Khan University.

Table-2: Indications for obstetric causes of referral.

Diagnosis	N (%) Total n =124
Pregnancy induced hypertension and pre-eclampsia	40 (32.3)
Preterm labour < 32 weeks	28 (22.6)
Foetal causes (congenital anomalies, FGR)	14 (11.3)
Postpartum haemorrhage	12 (9.7)
Ante-partum haemorrhage	9 (7.3)
Placenta previa	8 (6.4)
Puerperal infection/ sepsis	6 (4.8)
Obstetric Cholestasis/ Jaundice	4 (3.2)
Others	3 (2.4)

FGR: foetal growth restriction.

weekdays (i.e. Monday to Friday). Of them, 205(48.6%) were referred between duty hours (0800-1700 hours).

Of those patients who were referred to the AKUH, medical records of 195(69.9%) within the defined time period of the study were available for review. The mean age of these patients was 28±4.7 years. Moreover, 177(91%) patients were pregnant at the time of referral and the remaining 18(9%) were referred after delivery. Of the pregnant women, 63(35.6%) were primigravida and 25(14%) were grand multipara. Besides, 118(66.7%) pregnant women were in their third trimester of pregnancy at the time of referral.

Obstetric causes were the reasons for referrals in 124(63%) cases. The top three obstetric causes of referral included pregnancy-induced hypertension 40(32.3%), preterm labour (<32 weeks) referred for neonatal intensive-care unit (NICU) 28(22.6%), and foetal co-morbidities 14(11.3%). Post-natal haemorrhage and puerperal sepsis prompted referral 12(9.7%) and 6(4.8%) cases (Table-2).

Medical causes were the reason for referral of pregnant women in 52(29%) cases. These included management of dengue, upper respiratory tract infections, measles, urinary tract infections (UTIs) and exacerbation of reactive airway disease. Thrombocytopenia was seen in 6(11%) these cases, which mostly associated with patients who had an ongoing infection. Reasons for the 7(4%) surgical referrals included appendicitis and cholecystitis. Reasons for the 12(6%) gynaecological referrals included management of miscarriage or ectopic pregnancy.

Moreover, 183(94%) patients required admission to the hospital. Of them, 73(40%) women were managed as inpatient in the general ward at the AKUH while 69(38%) were admitted to the labour room directly. There were a few patients who required special care monitoring or admission to intensive care unit (ICU).

Furthermore, 22(11%) of all referral patients obtained financial support from the patient welfare department at the AKUH.

Of the pregnant women, 133(75%) delivered at the AKUH. Caesarean section was the mode of delivery in 92(69%) of these cases. Amongst those who delivered at the AKUH, 1(0.75%) maternal death due to puerperal sepsis and 9(7%) of neonatal deaths were recorded.

Discussion

Integration of primary, secondary and tertiary level of health services can have a significant impact on quality of care.[17] The importance of this has been highlighted in the 'Health for All' policy frameworks for the WHO's European region, which states that:

"People in the region should have much better access to family-and community-oriented primary health care, supported by a flexible and responsive hospital system. Countries should have comprehensive primary health care services, ensuring continuity of care through efficient and cost-effective systems of referral to, and feedback from, secondary and tertiary hospital services."[18]

There is considerable variation in the health systems in countries across the world. The health system in Pakistan is very complex due to the involvement of a large number of public as well as private-sector stakeholders.[11] Patients often bypass first-level health care facilities for higher-level centres based on prior dissatisfaction with the care provided at these facilities and lack of available resources.[9]

There have been several efforts for timely and appropriate referrals from community to hospital setting for patients in need.[8,9] Limited data is available on obstetric rate of referrals from a secondary level to a tertiary facility. Referral rates are contextual but range between 9.5% and 28.7%.[19] The data presented from AKUH integrated health system is much lower and indicates the variation in the scope of services of secondary level facilities. Siddiqi et al.

reported that the general referral rate for patients from a primary to a secondary health care facility in a small Pakistani city was 0.2%.[9] The emphasis should lie more on a timely and appropriate referral rather than their frequency.[9] Despite this fact, an extremely low referral rate may reflect hindrances within the referral system[9] and hence should be regularly audited.[19]

In this study, the most common reason for referrals was obstetric indications. Pre-eclampsia, preterm labour/ need for NICU care and foetal causes such as foetal growth restriction (FGR) were the most commonly reported causes. Pre-eclampsia and eclampsia are among the top three causes of maternal mortality in Pakistan.[20] With a preterm birth rate of nearly 16%, Pakistan ranks fourth among countries responsible for burden of preterm birth.[21] The presence of high-risk maternal and neonatal factors generates referrals of such cases to higher-level facilities for better case management. Incorporation of cost-effective strategies such as timely administration of corticosteroids and emergency neonatal care at secondary-level facilities should be considered for management of premature babies.[22]

The WHO recommends provision of comprehensive emergency for obstetrical and neonatal care services at secondary level.[23] However in developing countries the needs of obstetric patients are beyond the scope of this care. Medical causes of death have been highlighted to be significant contributors to maternal mortality. These include human immunodeficiency virus (HIV)-related deaths, or any other medical condition that may be exacerbated during pregnancy.[6] Similar results have been highlighted in this study where 27% of referrals were initiated due to medical conditions, most of which were due to infections. It was also noted that the length of stay for these patients was 1-2 days, which suggests that most of these cases were uncomplicated. Developing countries are known to have high prevalence of various viral and bacterial infections to which pregnant women may be susceptible. Hence, it would be important to develop general medical health care expertise along with obstetric training at maternal and child centres throughout countries like Pakistan. The availability of medically trained staff could help manage uncomplicated cases at secondary centres and reduce the burden of unnecessary referrals to overburdened and under-staffed tertiary care facilities in the country.[9]

The economic costs of urgent obstetric referrals for families can be quite high.[8] Our study reported that 22(11%) of patients required financial support through the patient welfare programme within AKUH network. The Pakistan Demographic and Health Survey 2006-07 also reported that 30% of pregnant women did not seek antenatal check-ups due to high costs of these services.[20] Financial constraints of a family should be addressed to ensure that the desired care for the pregnant woman and the baby is not hindered. This also highlights the importance of integrating health and social support services in the national health systems.[17]

This study was an attempt to analyse referral patterns within an integrated health care network of the AKUH. An effective referral network is essential for improved maternal and neonatal outcomes. Goldie et al. reported that 80% of reduction in maternal mortality is possible if referral strategies along with family planning, safe abortions and emergency obstetric care services are improved.[24] Darmstadt et al. reported that implementation of community-based interventions across the spectrum of pregnancy, childbirth and the post-natal period, along with timely referral for further clinical care, could avert nearly 60% of neonatal deaths.[25]

The referral process is very complex and consists of numerous stages from the time of identification of patient need to the time patient is actually received by the referred facility. Quality of care as well as capacity for provision of care - availability of ICU and NICU beds and ventilators at the referred facility - is also important for patient satisfaction and effective management. All of these processes need to be identified and audited on a regular basis to identify success and failures of policy and practice. Objective and validated measurement indicators are needed to assess the quality of referrals.[8] Detailed criteria for assessment of referral systems have been highlighted by Siddiqi et al. which include details regarding community awareness, infrastructure as well as availability of resources at the referred site.[9] However, a universal referral model may not be applicable as the population characteristics, cultural settings as well as the health care system of each country may vary significantly.[8] Hence, it is essential that protocols are contextualised according to the needs as well as the existing systems[8] and are periodically reviewed to ensure quality of care.

The retrospective nature of this study was one of its limitations. Furthermore, there are a few aspects of the referral process which were not evaluated in this study. The bidirectional communication as well as the time taken for the entire referral process between SLH and AKUH were not recorded. The availability of transport for the referral and its associated costs were also not assessed. These would be important to evaluate any

delays that may have been encountered during the referral process. The patient's satisfaction regarding the referral process, which includes communication regarding the need for referral, arrangements made for safe transfer of the patient and care at the tertiary facility should be also evaluated.

Conclusion

The most common reason for referrals was obstetric indications. Moreover, a quarter of referrals were initiated due to medical conditions, most of which were due to infections. Strengthening the referral systems can play a critical role in timely management of high-risk obstetric cases and eventually improve maternal and neonatal outcomes.

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