Original Research Article

Maternity handover in Kerala: a cross sectional study

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ABSTRACT

Background: The objective of the study was to explore the referral system from the community to hospital obstetric care in Kerala, India.

Methods: Cross-sectional study. A total of 206 obstetric inpatients in 3 hospitals in Kerala, India completed an orally-administered questionnaire regarding referral and attitudes towards healthcare information.

Results: Among 206 respondents, 19 (9%) had been referred from another healthcare provider. In multivariate analysis, referral was independently associated with being in a tertiary hospital (p<0.001). At total of 17 referred women received a document containing hand-written notes from their previous healthcare provider. Just 3 of the documents available to view were formal referral documents; others were test results and/or hospital notes. A total of 170 (86%) of the 206 women thought that receiving documents such as referral letters was important; mostly because it helped them understand their condition and explain it to others (91%).

Conclusions: A high rate of self-referral (91%) was reported by obstetric inpatients. It appears that some women who are referred do not receive a formal referral document. Participants thought that receiving referral documents was important. A strong health system requires transfer of information between primary and secondary/tertiary care services, which India is seeking to develop. Further research is needed into why women are not accessing community health services and the impact of the content of referral documents on patient care.

Keywords: Information transfer, Referral, Obstetrics, Kerala, India

INTRODUCTION

India is embarking on an ambitious reform of its health system. With the view of providing health insurance for half of its population, it has been described as the world's largest government funded health care programme.[1] Moreover, the programme, under the National Health Protection Scheme (NHPS) will seek to bolster the primary care system. This will involve upgrading 150,000 peripheral health centres into health and wellness centres. These centres will seek to provide comprehensive health care, and will help to achieve the sustainable development goals.[2] In particular, the initiative will aim to reduce the maternal mortality ratio to less than 100 deaths per 100,000 by 2020.

The targets of NHPS can be achieved through further investment on strengthening the primary care system, and the health system in general. Improving 'the continuum of care from outpatient to secondary and tertiary care' has been cited as an issue that needs to be comprehensively addressed.[1] A means to address the care pathways between primary and secondary/tertiary health care providers is by examining the existing referral systems within a health system.

Functioning referral systems are necessary for healthcare systems to run effectively. Information exchange between the community and hospitals through provision of referral letters and discharge summaries is essential to ensuring patient safety and continuity of care.[1] The quality of referral letters is often sub-optimal and such documents may be deficient in content, accuracy, legibility or timeliness.[3,4] Poor quality documents can result in misuse of resources and compromise patient safety.[5,6]

Referral is especially important within obstetrics due to the high numbers of professionals who support a woman through pregnancy and birth, the speed with which action often needs to be taken and the global burden of maternal mortality.[7] Delays in accessing emergency obstetric care, including poor referral systems, contribute to an increase in maternal mortality and morbidity.[8,9] Murray suggests that many referral systems in developing countries are not meeting the needs of pregnant women.[10] The high rates of self-referral noted in several low- and middle-income countries (LMICs) may reflect inappropriate bypassing of first-line services.[10] Well-designed, properly-utilized referral systems would result in more women giving birth in lower-level healthcare facilities, thus lowering maternal mortality and ensuring better use of scarce resources.[8]

Much of the evidence about referral systems emanates from high-income countries. There is limited evidence available from LMICs, especially those in Asia, about the state of referral systems. The situation in LMICs is likely to be worse than high-income countries since resources are limited and primary care is often under-funded.[11] Obstetric referral systems have not often been studied in India despite the fact that India has a maternal mortality ratio (MMR) of 162 deaths per 100,000 live births and accounts for 17% of global maternal deaths.[2,7] Kerala is a high-performing Indian state with regards to health indicators, with an MMR of 31 per 100,000, an institutional delivery rate of 99% and almost universal antenatal care (ANC).[12] Kerala is also high-performing with respect to other development indicators, with a 94% literacy rate and over 90% of houses having electricity and a toilet facility.[13,12] Consequently, research regarding healthcare in Kerala is likely to represent the best case scenario within India.

The aim of the present study was to explore the referral system from women's communities to hospital obstetric care in Kerala, India. The primary objective was to investigate the proportion of participants who were referred to hospital. Secondary objectives were to determine the proportion of participants who received a referral document, the importance of referral documents to participants and factors influencing likelihood of referral.

METHODS

A cross-sectional, questionnaire-based study was conducted at three hospitals (one secondary public, one tertiary public and one high-performing tertiary private) in Kochi, Kerala. The study population included women admitted to the obstetrics wards of the hospitals between January 31 and March 12, 2015. The inclusion criterion was women who spoke English or Malayalam. Those who lacked capacity, as ascertained by clinical members of staff on the ward, were excluded. Minors under the age of 18 were not automatically excluded, however inclusion required next-of-kin consent and the assent of the minor. Potential participants were approached at any point whilst they were an obstetric inpatient. Ethical approval was gained from the Institutional Ethics Committee at the Amrita Institute of Medical Sciences, Kerala, India and the BMedSc Population Sciences and Humanities Internal Ethics Review Committee, University of Birmingham, England. Informed written consent in the local language was obtained prior to data collection.

A sample size was calculated for the primary aim of investigating the proportion of participants who were referred to hospital. A required sample size of 138 was calculated based on a 5% margin of error and an 80% confidence level, assuming an institutional referral rate of 30%.[14]

The questionnaire [Appendix 1] was adapted from an unpublished questionnaire by Manaseki-Holland [personal communication], which focused on primary to secondary care referral of outpatients with chronic disease in Indian hospitals. The questionnaire was further refined after 3 days of piloting to reach a final version. The questionnaire was orally-administered in the local language of Malayalam with the aid of an interpreter.

Statistical analysis was performed with SPSS version 22 (IBM, Armonk, NY, USA). The χ^2 test was used to analyze the relationship between the dependent variable and categorical variables whenever less than 20% of the expected counts were <5 and all individual expected counts were ≥1. The Fishers exact test was used whenever these conditions were not met. A stepwise forward logistic regression model was constructed to assess the impact of variables of interest upon whether a participant was referred. For all statistical analyses, a two-sided p value of <0.05 was considered statistically significant.

RESULTS

The estimated total population available to take part in the study was 247 inpatients. However, due to time a resource constraints, the total number of women approached was 206. All 206 women agreed to take part and completed the questionnaire (100% of responders, 83.4% of the estimated population). The median age of the 206 respondents was 26 years (IQR 20-32) and all were married (Table 1). The majority (56%) of participants was Hindu and all had received at least secondary school education (Table 1). All women had visited a healthcare provider (HCP) during the course of their pregnancy, including for ANC. The most common

reasons for admission were pain (18%), Caesarean section (18%) and for safe confinement (18%) (Table 2).

Table 1: Socio-demographic characteristics of participants (n=206).

Characteristics	Number (%)[a]
Site (public/private)	
Public	145 (70)
Private	61 (30)
Site (secondary/tertiary)	
Secondary	138 (67)
Tertiary	68 (33)
Age (years)	
18-24	83 (40)
25-29	73 (35)
≥30	50 (24)
Marital status	
Married[b]	205 (100)
Religion	
Hindu	116 (56)
Muslim	55 (27)
Christian	35 (17)
Highest level of education[b]	
Completed secondary school	6 (3)
Completed higher secondary/ vocational training	127 (62)
Graduate	72 (35)
Currently working (during pregnancy)	
Yes	21 (10)
No	185 (90)
Ever worked (before pregnancy)	
Yes	81 (40)
No	125 (60)
Time taken to reach hospital	
Within 1 hour	137 (67)
1-4 hours	66 (32)
Over 4 hours	3 (2)
Number of adults in house (excluding participant)	
1-2	38 (18)
3-4	113 (55)
5-6	48 (23)
More than 6	7 (3)
Number of children in house	
0	78 (38)
1-2	113 (55)
Over 2	15 (7)
Number of rooms in house	
1	2 (1)
2-3	135 (66)
4 or more	78 (33)

[a]Some percentages do not sum due to rounding.
[b]Data missing for one participant.

Table 2: Reasons for admission (n=206).

Reason for admission	Number (%)[a]
Pain	37 (18)
Caesarean section	37 (18)
Safe confinement	36 (18)
Vomiting	22 (11)
Active labor	21 (10)
Past medical history or pregnancy risk factor	17 (8)
Cough	15 (7)
Vaginal bleeding	8 (4)
Routine tests	5 (2)
Reduced fetal movement	5 (2)
Other	30 (15)

[a]Number and percentages do not sum to 100 as participants were permitted to give more than one reason for admission.

Nineteen (9%, 95% confidence interval (CI) 5.0-12.9%) of the 206 participants were referred to hospital from a previous HCP. For the remainder, the hospital they were at was the first and only HCP they had visited for their current medical problem. All women were admitted to hospital via the hospital outpatient department (OPD) or the labor room. In univariate analysis, being at a private hospital (p<0.001), being at a tertiary hospital (p<0.001), a travel time of ≥ 1 hour (p=0.015) and religion (p=0.04) were significantly associated with referral (Table 3). 17% (6/35) of Christians were referred compared to 10% (12/115) of Hindus and 2% (1/55) of Muslims. A forward stepwise logistic regression model was constructed for multivariate analysis. The best available model accounted for 23% of the variance in whether or not a participant was referred (Nagelkerke R^2=22.5%). The only variable independently associated with referral was whether the hospital was secondary or tertiary. Participants at the tertiary hospital were 13 times more likely to be referred than those at the secondary hospital (odds ratio 12.84, 95% CI 3.57-46.24).

Of the 19 women who had been referred, 12 had visited a private hospital, 3 had visited a government hospital, 2 had visited government primary care and 2 had visited a private doctor/nurse/midwife. 17 women reported receiving a document from their previous HCP. Of the 8 documents available to view, 3 were referral documents (unstructured referral letters or structured referral forms) while others were documents such as test results (Table 4).

Of the 206 respondents, 170 (83%) thought that referral documents were important. The majority (91%) of these thought that such documents were important because they helped the participant to understand her condition and explain it to others. 28 (14%) participants did not think that referral documents were important. The most common reason for this was because the participants thought that staff and/or treatment at the hospital were good so such documents were unnecessary (3.8%) (Table 5).

Table 3: Variables associated with referral (n=205).

Variable	Overall (n=205)[a]	Not referred (n=186)	Referred (n=19)	P value
Site (private/public)				<0.001
Private	61	46 (75)	15 (25)	
Public	144	140 (97)	4 (3)	
Site (secondary/tertiary)				
Secondary	137	134 (98)	3 (2)	<0.001
Tertiary	68	52 (76)	16 (24)	
Age (years)				0.10
18-24	82	78 (95)	4 (5)	
25-29	73	66 (90)	7 (10)	
≥ 30	50	42 (84)	8 (16)	
Religion				0.04
Hindu	115	103 (90)	12 (10)	
Christian	35	29 (83)	6 (17)	
Muslim	55	54 (98)	1 (2)	
Highest education level				0.09
Below graduate level	133	124 (93)	9 (7)	
Graduate/above	71	61 (86)	10 (14)	
Currently working				0.70
Yes	21	20 (95)	1 (5)	
No	184	166 (90)	18 (10)	
Ever worked				0.84
Yes	80	73 (91)	7 (9)	
No	125	113 (90)	12 (10)	
Adults in house				0.21
1-2	37	32 (86)	5 (14)	
3-4	113	101 (89)	12 (11)	
More than 4	55	53 (96)	2 (4)	
Children in house				0.24
0	77	67 (87)	10 (13)	
1-2	113	106 (94)	7 (6)	
More than 2	15	13 (87)	2 (13)	
Rooms in house				0.44
<4	137	126 (92)	11 (8)	
≥4	67	59 (88)	8 (12)	
Time of travel to Hospital				0.007
<1 hour	136	129 (95)	7 (5)	
≥1 hour	66	55 (83)	11 (17)	
Reason for admission				0.29
Past medical history or pregnancy risk factor[b]	55	47 (85)	8 (15)	
Precautionary	38	35 (92)	3 (8)	
Acute	112	104 (93)	8 (7)	

[a]Some categories do not sum to 205 because of missing values. Percentages were calculated excluding participants with missing variables; [b]Includes Caesarean section.

Table 4: Documents received by participants who had been referred (n=19).

Document	Number[a]
Document available to view	
Referral letter (unstructured)	2
Scans or reports	2
Referral form (structured)	1
Medical notes and reports	1
Discharge summary	1
Unable to read (written in Mandarin)	1

Document	Number[a]
Document not available to view	
Participant did not have document on her person and document was not in hospital notes	7
Researcher unable to access hospital notes	2
No document received	2

[a] Percentages not presented due to small sample size.

Table 5: Importance of referral documents (n=206).

Importance of referral documents	Number (%)[a, b]
Yes, important	170 (83)
Helps me to understand my condition and explain it to others	154
Helps me to be attended faster the next time I see a healthcare professional	12
More professional	7
Other	5
No, not important	28 (14)
Staff and/or treatment at this hospital is good	8
I always come straight to this hospital	4
I have previously been to this hospital for treatment so they already have information about me	3
Other	10
Don't know	8 (4)

[a]Percentages are only presented for overall importance (yes/no/don't know) due to small sample of participants who said no. Percentages may not total 100 due to rounding; [b]Participants were permitted to give more than one reason.

DISCUSSION

This study has explored referral from the community to obstetric hospital inpatient care for women in Kerala, India. It was found that the majority of participants did not visit another HCP and instead self-referred to the hospital OPD or labour room, which then admitted them. This finding is consistent with other LMICs, with obstetric studies in Tanzania and Ghana finding self-referral rates of 70 and 82% respectively.[12,15] It has been suggested that high self-referral rates reflect "inappropriate" bypassing of lower-level services.[8] Bypassing lower-level services may be due to actual or perceived low quality of primary care alongside ease of access to secondary care.[8,14] Often there is no additional cost (either financial or in terms of time delay) to arriving at hospital as a non-referral case.[16,17] Furthermore, resources such as equipment, drugs or staff may not be adequately available in lower-level facilities, making hospitals the only appropriate place to receive healthcare in.[8,18] This situation is likely to be similar in Kerala as the Indian government has acknowledged the need to strengthen the primary care system nationwide.[19] A stronger, better-utilized primary care system would allow primary care professionals to act as gatekeepers to specialist resources, so only those who need secondary care are able to access it.[3] This would reduce the burden of care in hospitals and result in more effective use of specialist resources, which could then be better developed for those cases which really require them.

Geographical and financial inaccessibility of services has also been shown to contribute to a low rate of obstetric referrals, especially in emergencies.[6,8] This seems unlikely to contribute to a low referral rate in Kerala, which has an institutional delivery rate of 99%.[10] suggesting that services are available and well-utilized. Furthermore, in the present study, the time taken to reach the hospital was not associated with referral in multivariate analysis, perhaps because the study was undertaken in an urban area. The low number of referrals in this study make it hard to accurately identify variables which could predict referral. The only significant variable noted in multivariate analysis was whether the hospital was secondary or tertiary. Given that tertiary hospitals are referral centres, it makes sense that the number of referrals should be higher in a tertiary hospital. It is of note, however, that even in a tertiary hospital the majority of participants were not referred, suggesting that the primary function of these hospitals is as a district hospital rather than a referral centre. The association of religion and referral in univariate analysis is perhaps explained by the large Christian population close to the private hospital. The Nagelkerke R^2 value for the multivariate model, which indicates the amount of variance in whether a participant was referred or not, was low (23%). This suggests that there may be other variables that significantly predicted referral that were not examined in the present study. Potential variables include parity and gestational age.

This study also found that, though all participants who were referred had some form of document from their

previous HCP, few had a formal referral letter or form. It was, however, difficult to assess this with accuracy due to problems with access to and availability of referral documents, as many women did not bring it with them to hospital. Previous studies from other LMICs such as Honduras and Cambodia have found that not all patients receive referral letters.[20,17] Written referral documents are an important and sometimes only means of communication between primary and secondary HCPs.[6] The patient herself may be a poor source of information due to lack of medical knowledge, misinformation or misunderstanding.[21-23] Referral letters should provide information about the patient's presenting complaint, test results and previous treatment, which can aid in diagnosis and future treatment of a patient. Therefore, the lack of a referral letter or a poor quality referral letter can compromise management of a patient.[3-6] In fact, poor quality referral letters have been shown to lead to avoidable repetition of tests or unnecessary hospitalisation, meaning that scarce resources such as equipment and staff are not well utilised.[5] It should also be noted that it is unclear whether doctors in primary or secondary care always use the documents that they are given by patients. In this study, an inability to find referral notes in several patient files suggested that referral documents were not always used and/or valued by healthcare professionals. Further LMIC research is needed to determine if and how HCPs use patient-held referral documents.

Another key finding of this study was that the majority (83%) of participants thought that receiving documentation from their HCP was important. This indicated that patients valued the documents they received and were more likely to look after them and follow the advice given. It was also noted that none of the women in the present study reported leaving their documents at home, indicating that they were happy to transport them to HCP visits. Given the poor record-keeping in hospitals and lack of general practitioner equivalent in India, knowledge that patients are likely to retain referral documents could be used in interventions to improve the interface between community and hospital care in Kerala.[1,2] An example of this is an expansion and improvement of the Maternal and Child Protection Card used in parts of Kerala to record information on antenatal care and delivery notes.[24] Such interventions of formalised patient held records are supported by the World Health Organisation to improve the quality and utilisation of antenatal care.[25] The 94% literacy rate in Kerala means that nearly all patients would be able to read any advice or instructions received.

This is one of the first studies looking specifically at the state of handover in India, and one of its strengths is the large sample size, though it should be noted that the sample size was not calculated to detect such a low percentage of referrals which may limit reliability of the results. Also, socio-demographic characteristics of the sample available appear to be similar to Kerala as a whole, suggesting that results may be generalizable to the rest of Kerala.[10] Furthermore, data was collected from a variety of level and private vs. public hospitals, which reflects utilisation of healthcare in Kerala. It should be noted, however, that the private hospital in this study does not represent all private hospitals in Kerala since private hospitals are not regulated in India, with some having much more inferior services.[2] A limitation of this study is that it was difficult to establish the total population of admitted patients because there was a discrepancy between ward notes and the women on the ward. An estimated 84% of the population was reached, however, so results are likely to be representative of the population as a whole since no bias can be detected for those missed. Additionally, there were difficulties with translator understanding of some items of the questionnaires meaning that there was potential miscategorisation of some variables. Where this occurred the variable/data was not used in analysis to reduce error.

In conclusion, the present study has provided evidence that there is likely to be a low rate of obstetric referral in Kerala, particularly from primary healthcare settings, suggesting that most pregnant women self-refer to hospital. Additionally, the provision of documented referral information to pregnant women appears to be lacking. However, when questioned, women generally recognised the importance of information transfer and of receiving documentation from their healthcare providers. Further research is needed to explore the reasons why women may bypass primary care and ways to encourage appropriate use of primary and secondary care services. Research is also needed to formally assess the content of referral letters and the impact, if any, of the reception of such documents and the quality of their content on patient care.

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