Evaluation of Antenatal Referrals From Health Centres to the Maternity and Children’s Hospital in Dammam City, Saudi Arabia

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Objective: To evaluate antenatal referral rates from Primary Health Care (PHC) centres to the Maternity and Children’s Hospital in Dammam and factors affecting it.

Methodology: Four randomly Selected Primary Health Care Centres in Dammam city. A sample of 135 pregnant women referred to the hospital (cases) and 135 pregnant women not referred (controls) were randomly selected. A double phase sampling scheme was adopted. Questionnaires regarding the characteristics of the general practitioners (GPs) were distributed to those GPs caring for antenatal patients in the 4 health centres.

Results: There was a variation in the referral rates of the five general practitioners from 11.5 to 21.2 per 100 antenatal consultation. It was found that certain characteristics of the GPs had an important influence on the referral rates. High risk factors in pregnancy were present in some of the controls but they were not referred.

Conclusion & Recommendations: There is a variation in the referral rates.
between the GPs. There is a need to monitor and improve the quality of the antenatal care and the referral process. Better training of the GPs and implementing shared obstetric care is recommended.

**Key Words:** General practitioner (GP), Referral Rates, Antenatal Risk Factors, Primary Health Care (PHC) Centres.

### INTRODUCTION

Consultation between primary health care and secondary care specialists is an important feature of modern health delivery. Antenatal care is no exception to this, and referral for a second opinion and/or follow-up at the hospital at the appropriate time is an important antenatal care procedure. Early identification of high risk factors during pregnancy with appropriate referral will reduce both maternal and perinatal mortality.1,6

The incidence of high risk pregnancy in developed countries is 15.0%.7 In Saudi Arabia this incidence has been reported as 25% in the southern region8 and 54.4% in the Eastern Province.9

Referral rates have long been used by medical professionals to assess the utilization of health services. The investigators have not come across any study in the Kingdom of Saudi Arabia (KSA) that evaluated antenatal referrals. In this country the referral system from PHC centres to hospitals started to be implemented in all regions on 6th Safar 1409H.10 All patients were then required to register at their local PHC centre and seen at the secondary care hospital only when accompanied by a referral letter from their respective centres.

Wilkin and Smith, in the UK have recently reviewed general practitioners' referrals to hospitals since the early 1960s. They found a considerable variation in the rate of referrals.11 Starey reported a referral rate of 0.7 - 4.3 per 100 patients on list per year.12 Another study by Evans et al (1968), reported a referral rate of 4.8 - 8.5 per 100 patients on list per year.13

The hypothesis that referral rate variation reflects differences in patient, doctor, and/or practice characteristics has been explored by various investigators with conflicting findings.16-18

The objective of this study is to evaluate the referral process from PHC centres to hospitals and the factors influencing it in Dammam City.

### MATERIAL AND METHODS

A double phase sampling scheme was adopted. In the fast phase, the city of Dammam was divided into four socio-economic strata (low, middle low, middle high, high) and one PHC centre was randomly selected from each stratum. All referred pregnant women (cases) from these four centres, along with matched controls (non-referred pregnant ladies), were selected at random. Cases and controls were interviewed by 4 well-trained interviewers. The pregnant mothers were asked about age, gravida, parity, level of education, preference for follow up in pregnancy (private health centres, hospital or PHC centre and reasons), mother's expectation of care and reason for referral to MC hospital according to the mother's knowledge. Questionnaires were distributed to the GPs caring for antenatal patients in the 4 health centres; regarding their age, experience as a practitioner in Saudi Arabia and in general, and attendance of MCH courses.

Phase 2 of the research was conducted from 12 July to 19 August 1990.

All data obtained were coded and entered into a personal computer using a Data Base IV file. SPPS PC + program was used for the statistical analysis. A p-value of 0.05 or less was considered statistically significant.

### RESULTS

In all, 157 pregnant mothers were referred to the Maternity and Children's (MC) Hospital in Dammam from the 4 selected PHC centres during the study period. Twenty-two of these mothers (14.0%) were not interviewed because they either refused or left before they could be interviewed.
The remaining 135 ladies (cases) were compared with 135 non-referred mothers (controls).

The median gravida for cases and controls was 4.0. The median parity for both was 3. The mean age of the cases was 26.0 years with a standard deviation (SD) of 5.8 years and that for controls was 27.0 years, SD 5.55 years. No significant difference was found (P-value = 0.880). Seventy-two (53.3%) of the cases were Saudis compared to 78 (57.8%) controls. This difference was statistically insignificant (P = 0.3909).

On average, the cases were taller than the controls, but not significantly so (mean 154.2±8.5 cm, and 152.7±6.1 cm respectively, P = 0.150). Similarly, no significant difference was noted between the mean weight for the cases and controls (66.4±17.1 kg and 68.1±14.00 respectively, P = 0.135).

The rate of illiteracy among the cases was 41 (30.4%) compared to 51 (37.8%) for the controls while the number of those who finished university education was 18 (13.3%) among cases and 15 (11.1%) among the controls. Mann Whitney test showed no significant difference (P = 0.051).

Eighty (59.3%) of the cases preferred to be followed up at the PHC centre, while 26 (19.3%) preferred the MC hospital. The corresponding figures for the controls were 102 (75.6%) and 9 (6.7%). Preference for the place of follow-up was statistically significant only for the PHC centre (P = 0.003).

Of the 270 cases and controls, 141 (52.2%) of them had been referred at least once during previous pregnancies to the MC hospital.

Forty-seven of the cases (71.2%) and 53 (70.7%) of the controls did not experience delays with the specialists when asked about the quality of care. Of the cases, 14.1% believed that care at the MC hospital was better than at the PHC centre compared to 18.5% of the controls, but the difference was not significant (P = 0.768) (Table1).

| Item                  | Cases   | Controls    |
|-----------------------|---------|-------------|
| Hospital better than HC | 19       | 25          | 18.5    |
| Same                  | 107     | 102         | 75.6    |
| Worse                 | 3       | 2           | 1.5     |
| Don’t Know            | 6       | 6           | 4.4     |
| **Total**             | **135** | **100**     | **135** | **100** |

PREGNANT MOTHERS’ PRACTICE

The reasons for referral as stated by the GPs were: 54 (40%) for routine check up, 27 (20%) for ultra sound and 16 (11.9%) for medical reasons.

The majority of the cases (87.4%) knew the reason for their referral. Only 3 (2.2%) of these 118 cases were referred upon their request (Table2).

Of the 135 referred mothers, 133 were given appointments and only 2 ladies missed their appointment dates because they travelled outside the KSA. Out of the total referrals, only 25 (18.5%) were for the emergency room. The mean

| Items                      | Frequency | %     |
|----------------------------|-----------|-------|
| Lab Investigation          | 1         | 0.7   |
| Ultrasound                 | 38        | 28.1  |
| Request                    | 3         | 2.2   |
| Treatment & Evaluation     | 34        | 25.2  |
| Diagnosis                  | 3         | 2.2   |
| Don’t know                 | 17        | 12.6  |
| Routine check-up           | 39        | 28.9  |
| **Total**                  | **135**   | **100** |

Table 1
Rating of Care Satisfaction in Maternal and Children’s Hospital by the Cases and Controls

Table 2
Reasons for Referral according to the Pregnant Mothers’ Knowledge

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time for the OPD appointments to see a specialist (non-emergency) was 6.1 days ± 2.9, with a range of 2-15 days.

Thirty-four (25.2%) of the referred mothers visited a private dispensary or hospital, at least once, during their pregnancy compared to 28 (20.7%) of the controls (P = 0.4694). Among the reasons stated by all mothers for preferring a private dispensary or a private hospital were better care (48.4%), no delays (22.6%), less crowds and round-the-clock service (29.0%).

Table 3 shows the distribution of risk factors in the present pregnancy among referred mothers and controls. High risk factors were present among 104 (77.0%) of the cases compared to 91 (67.4%) of the controls which was insignificantly less than the cases 38 (28.1%).

### Table 3
**Risk factors in the present pregnancy among referred mothers and controls**

| Risk Factor                  | Cases (N=35) | Controls (N=35) | P Value |
|------------------------------|-------------|-----------------|---------|
| Parity 7 & more              | 38          | 36              | 0.785   |
| Threatened abortion          | 9           | 6               | 1.00    |
| Pre-eclampsia                | 0           | 0               | 0.50    |
| Gestational diabetes         | 1           | 2               | 0.50    |
| Short stature in primigravida| 2           | 1.5             | 0.50    |
| Age < 16                     | 2           | 1.5             | 0.50    |
| Age 35 and >                 | 17          | 12.6            | 0.432   |
| Small for date               | 1           | 0.7             | 0.50    |
| Obesity                      | 2           | 1.5             | 0.50    |
| Sickle cell disease          | 8           | 5.9             | 0.791   |
| Anemia                       | 7           | 5.2             | 0.776   |
| G6PD                         | 1           | 0.7             | 0.50    |
| Hepatitis                    | 4           | 3.0             | 0.61    |
| Toxoplasmosis                | 5           | 3.7             | 0.20    |
| Medical disorders            | 2           | 1.5             | 0.50    |
| Others (UTI, Ovarian cyst)   | 5           | 3.7             | 0.61    |
| **Total**                    | **1.4**     | **91**          |         |

**RISK FACTORS**

High risk factors in previous pregnancies were present among 94 (69.6%) of the cases compared to 76 (56.3%) of the controls. Of the referred mothers, 5.9% had a history of 2 or more abortions as compared to 8.1% of the controls. The difference was not statistically significant (P = 0.475). Anemia was less common among the cases compared with the controls (9.05 and 11.1% respectively), but the difference was not statistically significant (P = 0.543).

**REFERRAL RATES**

The referral rates were found to be in the range of 11.5-20.3 per 100 antenatal consultations (Table4). The difference in referral rates was significant only between health centre D and health centre B (P = 0.0223). There was one female GP in each PHC centre responsible for peri-natal patients. In one of these health centres, the GP was on leave during the study period and was replaced by another from the same health centre. Referral rates for each PHC centre and the referral rates for the 5 GPs during the study period were calculated.

General practitioner number 3 had the highest rate (21.2 per 100 consultations) while number 2 had the lowest (11.5 per 100 consultations). However, the difference between the referral rates of the 5 GPs was not statistically significant (p = 0.1098) except the referral rates between GP 1 and GP 4 which were however, statistically significant (P = 0.0223).

### Table 4
**Referral Rates for the 4 Health Centres**

| Health Centre | No. of referred pregnant women | No. of non-referred pregnant women | Referral rate* per 100 consultations |
|---------------|--------------------------------|-----------------------------------|-------------------------------------|
| A             | 75                             | 463                               | 13.9                                |
| B             | 42                             | 324                               | 11.5                                |
| C             | 16                             | 91                                | 15.0                                |
| D             | 24                             | 94                                | 20.3                                |
| **Total**     | **157**                        | **972**                           | **13.9**                            |

* P value = 0.0223
The referral rate was inversely related to the number of years of experience in Saudi Arabia, with a weak correlation (Kendall's Tau C = 0.1200). However, this rate was positively correlated with years of general practice outside the Kingdom (Kendall's Tau C = 0.36000) and weakly positively correlated with the total years of experience as general practitioner (Kendall's Tau C= 0.1667).

To study the effect of GP's age, they were divided into 2 groups. Those who were more than or equal to 35 years of age and those less than this age. Chi square test indicated that the GPs who were 35 years or older had lower referral rates than their younger colleagues (P= 0.0163). Regarding experience in obstetrics, there was only one GP who had worked in obstetrics for 6 years. Fisher's Exact Test showed no significant difference (P=0.1628). Furthermore, only one GP had had a course in MCH (P= 0.1229). Interestingly, referral rates of Arab GPs were statistically and significantly higher than the rest (p= 0.0005).

DISCUSSION

In our study, the illiteracy among pregnant mothers was high. This might affect their understanding of the importance of the referral process.

Although both cases and controls liked to be followed-up at the health centre, a significantly higher number of controls had this preference (P = 0.0034). This observation may be explained by the fact that both cases and controls knew the interviewers were health centre employees and by being positive in answering this question they may flatter them.

Furthermore, the familiar surroundings, good relations with and confidence in the GP or the distance from their houses to the centre might influence their preference. To explain the significant difference between opinions of cases and controls, it may be thought that previous referrals to MC Hospital influenced their opinion.

However, upon investigation, more mothers (cases) had been referred in previous pregnancies than controls. This difference was significant (p = 0.028). These results may refute the previous hypothesis.

Another explanation is the patient’s attitude. Some patients wanted to be referred to the hospital because they believe that good medical services can be obtained only in hospitals. They credit the hospital doctor as more skilled, and hospitals have sophisticated equipment as well as modern facilities. They assume that PHC doctors are general practitioners with less experience and have on hand less refined technology.

Nearly equal numbers of the cases and controls indicated the care in the health centre and in the hospital were the same. On the other hand, in both cases and controls who had used private sectors, 48% indicated care provided in these private firms was better. In a recent study conducted in the same area, the investigator showed that more than half of the out-patients in private clinics in Dammam were Saudis. They claimed that specialists were available in private clinics and the waiting time was less.

The mean appointment time to see a specialist was considered short. Hull and Westernman reported that the mean waiting time for appointment was 23.5 days in Birmingham and 5.2 days in Amsterdam. However, Fraser and Patterson showed that the mean waiting time for appointments was shorter for private referrals than those for NHS referrals.

Almost 13% of the cases were not aware of the reason for their referral. This may be explained by several factors: among those are that the GPs may underestimate the importance of clarifying this reasons to their patients. Furthermore, lack of communication between non-Arabic speaking doctors and patients may play a part. Finally, the patients' lack of interest in knowing the reason.

Risk factors in previous pregnancies were present in both cases and controls. The risk factors in present pregnancies showed threatened abortion in 6 (4.4%) of the controls. Anemia was also present in some controls. But may have been so mild as to justify referral. On the other hand,
gestational diabetes was present in 2 (1.5%), pre-eclampsia in 1 (0.7%), and sickle cell anemia in 7 (5.2%) of the controls. These patients should have been referred. The rate of toxoplasmosis was higher among the controls than the cases, but the titer was low except in one instance where it was 1/1034. This rate was not low and the GPs were advised to refer any pregnant lady with a high titer or a rising titer in consecutive tests.

Other reasons for missed referral were short stature and/or age less than 16 years, present in approximately 3.0% of the controls.

The referral rates of the 5 GPs ranged from 11.5 to 21.12 per 100 consultations. Starey reported referral rates at 2-17.3% per 100 patients. Others reported general referral rates of 1.5-5.4% and 6.1%. Comparisons between these studies is difficult because the types of studies and the practice were different.

The characteristics of the GPs such as experience in Saudi Arabia showed weak positive correlation with the referral rate. This may be explained by the fact that the more years spent as a GP in Saudi Arabia, the more accustomed to the regulations and the system the physician becomes. The years of practice outside Saudi Arabia have a positive correlation with the referral rate. This may be due to the fact that the regulations of the referral system are different outside the Kingdom and/or that the GPs tend to over-protect themselves through referrals due to medico-legal responsibilities.

The finding that older GPs tend to refer less patients, agrees with the study of Morell et al which found the referral rate inversely related to age. Other studies show no relationship between doctor's age and referral rate because they have a different training background.

In a UK study, it was found that women and overseas qualified doctors were more common among the low referrers. Other studies showed no relation between the referral rate and the training background and some tried to explain the residual variation by the training and experience, but there was little direct evidence.

In conclusion, it is clear that there is a need to monitor and improve the quality of the referral process and consequently antenatal care. Further studies are needed to explore the factors affecting this issue. There is a need for better communication and cooperation between GPs and specialists to define cases that should be referred. Shared antenatal care, should be accepted and promulgated. This is important in order to save money and efforts and to improve patient care and define responsibilities.

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REFERENCES

1. Ohlsson A. Better perinatal care in Saudi Arabia. Ann Saudi Med 1985; 5: 169-178.
2. Roystan E, Ferguson J. The coverage of maternity care: a critical review of available information. World Health Stat Quart 1985:38-39.
3. Harrison KA. Tropical obstetrics and gynaecology 2. Maternal mortality. transaction of the Royal Society of Tropical Medicine and Hygiene 1989: 83: 449-453.
4. Barros FC, Victoria CG, Vaughan JP, Capellari MM. Perinatal risk in third world cities. World Health Forum 1985; 322-324.
5. Lennox CE. Assessment of obstetric high risk factors in developing countries. Trop Doc 1984; 14: 125-129.
6. Harrison KA. Approaches to reducing maternal and perinatal mortality in Africa. In: Philpott RH, editor. Maternal services in the developing world - what the community needs. Proceedings of the Seventh Study Group of the Royal College of Obstetricians and Gynaecologists. London, 1979 (Sept.); 58.
7. Chatterjee T, Al Awdah S, Rahman MS, Al Sibai MH. A review of high risk factors in 586 patients delivered at Al Khobar Teaching Hospital. Proceedings of the Seventh Saudi
Medical Meeting at King Faisal University, Dammam, 3-6 May 1982: 336-369.

Hartley DRW. One thousand obstetric deliveries in the Asir Province, Kingdom of Saudi Arabia: a review. Saudi Med J 1980: 1: 187-196.

Ministry of Health Report No. 45/457/23 2/6/1409 H.

Personal communication with the Medical Director of Maternal and Children's Hospital, Dammam. May 1993.

Wilkin D, Smith A. Explaining variation in general practitioner referrals to hospital. J Fam Pract 1987; 4(3): 160-169.

Wilkin D, Hallam L, Leavey R, Metcalfe D. Anatomy urban general practice. 1st ed. Tavistock Publications, London 1987; 147-152.

Crombie DL. Social class and health status - in equality or difference. Occasional paper 25. J R Coll Gen Pract 1984.

Al Omran HM. Out-patient private medical practice in Dammam area. King Faisal University, Dammam 1990 [dissert].

Hull FM, Westerman RF. Referral to out-patients medical department at teaching hospitals in Birmingham and Amsterdam. BMJ 1986; 293: 311-4.

Fraser RC, Patterson Hr. Referrals from general practices referrals to hospitals in an East Midlands City - a medical audit. J R Coll Gen Pract 1974; 24: 304-319.

Gleann JK, Lawler FH, Hoerl MS. Physician referrals in a competitive environment. An estimate of the economic impact of a referral. JAMA 1987; 258(14):1920-1923.

Morell DC, Gage HG, Robinson NA. Referral to hospital by general practitioners. J R Coll Gen Pract 1971; 21: 77-85.