ORIGINAL RESEARCH PAPER
Volume-6 | Issue-11 | November-2017 | ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 78.46
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ASSESSMENT OF REFERRALS BY FAMILY PHYSICIANS AT KING ABDUL-AZIZ HOSPITAL–AL AHSA

Medicine

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ABSTRACT

Decisions regarding referrals between health care levels are strongly influenced by a health care practitioner's qualifications. This cross-sectional study at King Abdul-Aziz hospital (KAH) evaluated referrals by family medicine (FM) department physicians to other specialists and assessed the relationship between qualification and referral criteria. Data of 1590 patients referred from various KAH clinics during March 2017 were collected via electronic system review and structured questionnaires To assess the differences between board-certified and non-board-certified FM physicians. Referral rate was 23.4%. Board-certified physicians tended to refer patients to dentistry and obstetrics/gynecology departments, whereas non-board-certified physicians more frequently referred to medicine and surgery (P=0.047). The referral rejection rate was 11.8%. Board-certified physicians reported more frequent patient follow-up (odds ratio [OR]: 0.39, P=0.001), discharged more referred patients (OR: 0.37, P=0.001) and were more likely to have accepted referrals (OR: 2.3, P=0.002). We conclude that qualification affects referral decisions.

KEYWORDS

Referral, Family Medicine, Qualification

Introduction

Saudi Arabia has seen significant increases and improvements in health services in recent decades (Walston et al., 2008). According to the World Health Organization (WHO), the Saudi health care system was ranked 26th among 190 health systems worldwide in 2000 (Preker et al., 2000). The Ministry of Health (MOH), as the main governmental provider and financer of health care services in Saudi Arabia, covers 60% of all health services. The MOH provides primary, secondary, and tertiary health care services, in addition to preventive medicine and public health initiatives (Ministry of Health, 2009).

Primary health care (PHC) encompasses both preventive and curative primary care services, as well as the referral of cases requiring more progressive care to secondary public hospitals (Almalki et al., 2011). Accordingly, PHC is an essential service that is made universally accessible to individuals and families in a community via full participation and affordable costs. PHC systems form an integral part of the national health care system, where they form nuclei of overall social and economic development at the community level and emphasize health promotion and disease prevention (Ministry of Saudi Arabia National Guard, 2014).

Currently, at the King Abdul-Aziz National Guard hospital in Saudi Arabia, all patients who are seen by family medicine physicians at PHC centers and require a second medical opinion, further investigation, or admission must be referred according to their clinical status to the emergency department (ED) or appropriate specialty service for continuity of care. Such referrals of patients from primary care to medical specialist care and back to primary care comprise an important activity in any health care system (Grumbach et al., 1999), and optimization of this process is important for the effectiveness, safety, and efficiency of medical care (Kvamme et al. 2001). Evidence suggests that the gate-keeping role of the general practitioner (GP) can increase the efficacy of the system and decrease costs (Gervas et al. 1994).

Currently, the primary care referral rate is defined as the proportion of the patients seen at a PHC center who were referred to and seen by primary care physicians during a set time period (O'Donnell, 2000). Therefore, the current study aimed to assess the referral rate and related factors in the Family Medicine department of KAH and to evaluate the role of physician qualification in referrals.

Literature Review

In a previous cross-sectional study, Jarallah (1998) evaluated the quality of referrals from PHC centers to a general hospital in four regions of Saudi Arabia and reported that both referral letters and feedback reports were of poor quality and required improvement. Such improvements can be achieved through quality assurance programs. In a cross-sectional study conducted in the USA in 1999, Franks et al. (1999) assessed variations in the referral rates (i.e., extent and stability over time and across diagnostic categories of 201 primary care physicians and found wide variations that were independent of the case mix. Chan and Austen (2003) evaluated the effects of patient, physician and community-level variables on the referral rate, and concluded that the average patient received 0.56 referrals per year (range 0–61), while the referral rate of female physicians was 8% more than that of male physicians.

Faulkner et al. (2003) systematically reviewed the effects of primary care-based service innovations on quality and patterns of referral to specialist secondary care and found that in all cases, the direction of change for financial interventions was as expected. Furthermore, no overall patterns of change in referral costs or total costs were observed in an analysis based on intervention type. Rosemann et al. (2006) further described the experiences of consultants, GPs, and patients with referrals from primary care to medical specialist care. Overall, the consultants were very positive about the appropriateness of referrals (91%), but were somewhat more critical regarding the provided information about patients' medical histories (61%) and prescriptions (48%).

Abdelwabid et al. (2010) also assessed referral patterns and identified the appropriateness of referral letters and consultant feedback. The results of that study suggested the need for improvements in the quality standards of the referral process, given the poor quality of the received letters and feedback reports. Akbari et al. (2008) evaluated interventions that aimed to improve outpatient referrals from primary care to secondary care and found that only active local educational interventions involving secondary care specialists and structured referral sheets were found to affect referral rates, based on current evidence.

In a cross-sectional study in Boston with a sample of 616 physicians, Barnett et al. (2012) reported that primary care practitioners were more often concerned with physician communication and patient access.

Hirsch et al. (2012) conducted a cross-sectional study in Germany and concluded that improvements in training and increased competency in the routine care of chronic patients effectively reduced the referral rates of primary care physicians. In another cross-sectional study conducted in Spain, Delgado et al. (2014) assessed the relationship between the referral rate and the physician's gender and observed no differences related to this factor.

Shadd et al. (2011) assessed referral patterns in a review of Canadian primary care electronic health records (EHR) and observed similar patterns of referral to those reported from administrative databases, with most variability at the patient level. Ringberg et al. (2014) evaluated the differences in reasons for referral between Norwegian male and female GPs and between GPs with high and low referral rates. Thorsen et al. (2016) reported that training focused on a patient-centered approach to family medicine, the ease of conference with hospital consultants, and patient cooperation when making a referral may foster both self-reflections regarding one's own competencies and increased levels of confidence among physicians. Ringberg et al. (2013) demonstrated a high overall referral rate among GPs, and observed that male GPs, as well as FM specialists, made significantly fewer referrals to secondary care, although the latter more frequently made referrals for radiological examination.

Methods

This cross-sectional study was conducted at the FM department of King Abdul-aziz National Guard Hospital during March 1–14, 2017. This department comprised nine clinics: three each of employee clinics, FM clinics, and business clinics. These clinics operated on 5 days per week (Sunday–Thursday) from 8:00 to 17:00. Sixteen physicians staffed these clinics: two consultants, four assistant consultants, one board-certified, five staff physicians, and four R4 residents. The physicians were equally distributed between clinics, with at least one senior physician (assistant consultant or consultant) per session.

This study included all referred patients who visited FM department clinics at KAH and was referred to another specialty during March 1–14, 2017. However, patients with referrals signed by residents at academic levels 1–3 were excluded. Data were collected using a secondary collection (i.e., chart review) method and a review of the electronic BEST CARE system, which was implemented in December 2016. The data included the complete patient history, physician's documentations and orders, current medications, and medical imaging and laboratory results. For each referred case, the study investigators completed a structured questionnaire. The referral form in BEST CARE system was revised during questionnaire formulation in reference to previous studies (O'Donnell, 2000; Hirsch et al., 2012; Delgado et al., 2014), and was reviewed by two family medicine consultants and a community medicine specialist. After a 2-day pilot study in the same department, the questionnaire was modified accordingly.

The questionnaire comprised three parts: information about the requesting physician, information about the referral, and information about the referred patient. The first part included the physician's gender, job title (i.e., qualification; board-certified or non-board-certified), and experience in FM practice (< 5 years or ≥5 years). The second part included the referral date, time, type, cause (management, management and diagnosis, or other) and specialty. The third part included referred the patient's age, gender, nationality, and history of chronic disease (no, 1–2, or ≥3 chronic diseases).

The Statistical Package for the Social Sciences (SPSS), version 21 (IBM, Armonk, NY, USA) was used for data collection, coding, entry, cleaning, and analysis. All variables were categorized and distributed with percentages. A bivariate analysis of all variables based on physician qualification was conducted using the chi-square test With significance level of Probability value of < 0.05.

This study proposal was approved by the Saudi Commission of Health Specialties (SCHS), King Abdullah International Medical Research Committee (KAIMARC) FM physicians and FM department.

Results

During March 1–14, 2017, 1590 patients were treated in the FM department of KAH. Among them, 372 patients (23.4%) were referred to other specialties. The referral rates were approximately 28% at the business and FM clinics and 17.5% at the employee clinics (Figure 1).

Table 1 presents the general characteristics of the referring physicians, visits, and referrals. Among the 379 referred patients, 57% were referred from business clinics, 25% from employee clinics, and 18% from FM clinics. Male physicians referred 75% of cases. Board-certified physicians made 44.4% of referrals, and 56.7% of referring physicians had <5 years of experience in FM practice. Of the referred patients, 61% had a complaint during the visit, 80.4% participated in follow-up, and 14.5% were discharged during the visit. Most cases were referred to the specialties of medicine (23.4%), surgery (17.5%), and ophthalmology (18.3%). Furthermore, 51.6% of referrals were made for therapeutic-related issues, whereas 27.7% were made for therapeutic and diagnostic issues. The rejected referral rate was 11.8%.

Among the referred patients (Table 2), 68.8% were female, 45.9% were aged 46–60 years, and 97.5% were Saudi. A review of the referred patients' histories of chronic diseases showed that 21.4%, 40.1%, and 38.5% had no, 1–2, or ≥3 more chronic diseases, respectively. The chronic diseases commonly observed in referred patients included dyslipidemia (40.6%), diabetes mellitus (31.7%), hypertension (34.4%), and vitamin D deficiency (23.1%) (Figure 2).

Table 3 presents the results of a bivariate analysis of referred cases by physician's job title, as well as calculated odds ratios (ORs). Statistically significant differences were observed between board-certified and non-board-certified physicians in terms of the type of referring clinic, physician's gender and level of experience, type of visit and management plan, history of chronic diseases, patient age, and referral status. Board-certified physicians had lower referral rates at employee clinics (OR: 0.32, P=0.001, 95% confidence interval [CI]: 0.2–0.6). Odds of male gender board certified compared to non-certified physicians was 0.14 (P=0.001, 95% CI: 0.1–0.2) and odds of experience in FM field for less than five years was 11.5 (P=0.001, 95% CI: 6.8–19.3). Also, they were more likely to have referred patients with follow-up in FM clinics (without new complaints) (OR: 0.39, P=0.001, 95% CI: 0.2–0.7), to have discharged referred patients (OR: 0.37, P=0.001, 95% CI: 0.2–0.6), and less likely to have referred patients with 1 to 2 chronic diseases (OR: 0.5, P=0.009, 95% CI: 0.3-0.8), 3 or more (OR: 0.4, P=0.005, 95% CI: (0.3-0.8)) and to have treated patients aged 45–60 years (OR: 0.24, P=0.02, 95% CI: 0.1–0.8). Finally, referrals from board-certified physicians were significantly more likely to be accepted (OR: 2.3, P=0.002, 95% CI: 1.2–4.7).

As shown in Figure 3, the distribution of specialties to which FM physicians made referrals differed significantly by physician status (P=0.047). Board-certified physicians more frequently referred patients to the specialties of obstetrics/gynecology and dentistry, whereas non-board-certified physicians more frequently referred patients to medicine and surgery.

Table 1: General characteristics of the requesting physicians, visits, and referrals

Item	Categories	Number (372)	Percent (%)
Clinic requested referral	Business clinic	212	57%
	Employee clinic	93	25%
	Family medicine	67	18%
Physician's Gender	Male	279	75%
	Female	93	25%
F.M. board certified	Yes	165	44.4%
	No	207	55.6%
Physician's experience	<5 years	211	56.7%
	>5 years	161	43.3%
Patient's complaint (Missed: 4)	Yes	225	61.1%
	No	143	38.9%
Patient's visit	New complaint	73	19.6%
	Follow up	299	80.4%
Specialties of referrals	Medicine	87	23.4%
	Surgery	65	17.5%
	Obstetrics/gynecology	43	11.6%

	Dentistry	34	9.1%
	Ophthalmology	68	18.3%
	Orthopedics	26	7%
	Ear/nose/throat	29	7.8%
	Other	20	5.4%
Management	Discharge	65	17.5%
	Follow-up	307	82.5%
Referral status	Accepted	328	88.2%
	Rejected	44	11.8%
Cause of referral (Missed: 4)	Therapeutic and diagnostic	102	27.7%
	Therapeutic	190	51.6%
	Other	76	20.7%

F.M., family medicine

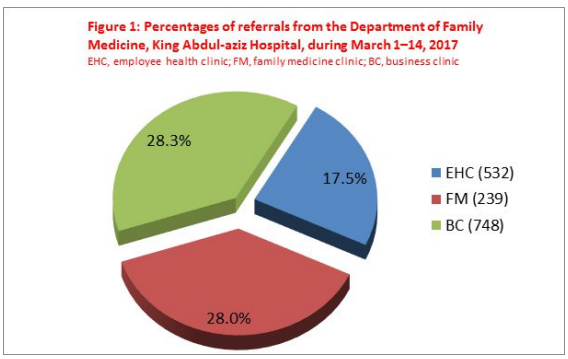
Table 2: Distribution of the characteristics of referred patients

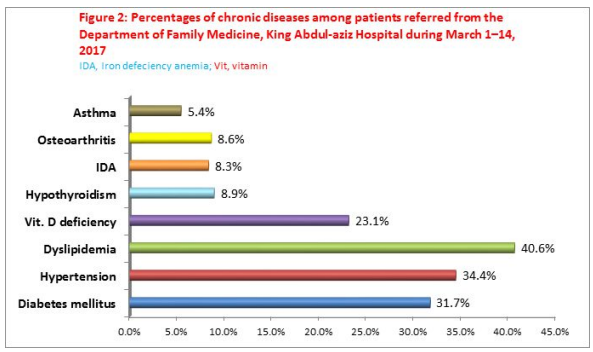
Item	Categories	Number (372)	Percent (%)
Gender	Male	116	31.2%
	Female	256	68.8%
Age (years) (Missed: 2)	≤15	12	3.2%
	16–30	50	13.5%
	31–45	72	19.5%
	46–60	170	45.9%
	>60	66	17.8%
Nationality (Missed: 6)	Saudi	357	97.5%
	Other	9	2.5%
History of chronic diseases (Missed: 3)	No	79	21.4%
	1–2	148	40.1%
	≥3	142	38.5%

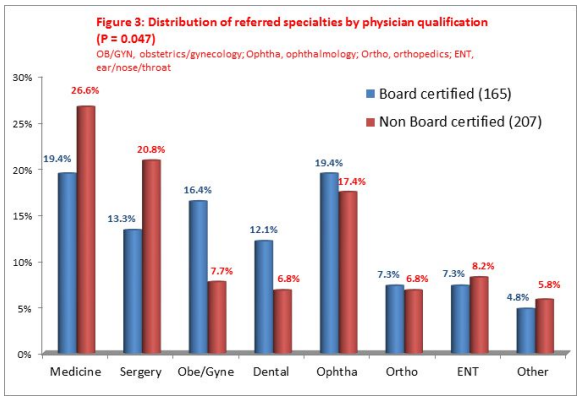
Table 3: Bivariate analysis of referred cases according to physician qualification

Item	Categories	Board certified		Non		P value	OR (95% CI)
		(165)	(%)	(207)	(%)		
Clinic	Business clinic	65	39.4%	147	71%	0.001	0.32 (0.2–0.6)
	Employee clinic	61	37%	32	15.5%	0.3	1.4 (0.7–2.6)
	Family medicine ®	39	23.6%	28	13.5%	1	
Physician's Gender	Male	92	55.8%	187	90.3%	0.001	0.14 (0.1–0.2)
	Female ®	73	44.2%	20	9.7%		
Physician's experience	<5 years	141	85.5%	70	33.8%	0.001	11.5 (6.8–19.3)
	≥5 years ®	24	14.5%	137	66.2%		
Patient's complaint (Missed: 4)	Yes	103	62.8%	122	59.8%	0.56	1.1 (0.7–1.7)
	No ®	61	37.2%	82	40.2%		
Patient's visit	Follow-up	119	72.1%	180	87%	0.001	0.39 (0.2–0.7)
	New complaint ®	46	27.9%	27	13%		
Management	Follow-up	123	74.5%	184	88.9%	0.001	0.37 (0.2–0.6)
	Discharge ®	42	25.5%	23	11.1%		
Cause of referral (Missed: 4)	Therapeutic/diagnostic	44	27%	58	28.3%	0.46	0.8 (0.4–1.5)
	Therapeutic	82	50.3%	108	52.7%	0.41	0.8 (0.47–1.4)
	Other ®	37	22.7%	39	19%	1	
History of chronic diseases (Missed: 3)	No ®	47	28.7%	32	15.6%	1	
	1–2	61	37.2%	87	42.4%	0.009	0.5 (0.3–0.8)
	≥3	56	34.1%	86	42%	0.005	0.4 (0.3–0.8)
Patient age (years) (Missed: 2)	0–15 ®	8	4.8%	4	2%	1	
	16–30	36	21.8%	14	6.8%	0.72	1.3 (0.3–4.96)
	31–45	33	20%	39	19%	0.2	0.4 (0.12–1.5)
	46–60	55	33.3%	115	56.1%	0.02	0.24 (0.1–0.8)
	≥61	33	20%	33	16.1%	0.29	0.5 (0.14–1.8)
Referral status	Accepted	153	92.7%	175	84.5%	0.02	2.3 (1.2–4.7)
	Rejected ®	12	7.3%	32	15.5%		

®, mean reference; OR, odds ratio; CI, confidence interval
Statistical values were determined using the chi-square test.







Discussion

The total referral rate from the FM department in KAH during this study period was 23.4%, i.e., it is higher than the rate of 16% estimated by Abdulwahid et al. (2010) in Southeastern of Saudi Arabia. The high referral rate in the present study might be explained by the fact that all patients requiring follow-up at a dental clinic or prenatal care were referred from the FM department. Inter-study differences in the area, population, duration of data collection, and health institution might also explain this difference in referral rates. The present finding that business and employee health clinics had higher referral rates relative to FM clinics can be explained by the fact that patients who are followed up at specialist clinics must visit a FM clinic to be referred to another specialty.

This study found that most referrals were requested from male physicians in contrast to the findings of a study conducted in Spain by Delgado et al. (2014), which found no difference in referrals according to the physician's gender. However, our study calculated the percentages of physicians' genders for referred cases and did not determine the total referral rate by gender. We note that 11 male physicians and only three female physicians staffed the FM clinics.

This study also found that non-board certified physicians had a significantly higher referral rate, compared with their board-certified counterparts. Furthermore, we found that board-certified physicians were significantly more likely to have <5 years of experience with FM, compared with non-board-certified physicians. However, we did not identify a significant difference in the total referral rate among all patients who visited FM clinics during the data collection period according to the physician's experience level.

Most referred patients presented a complaint during the FM clinic visit (61.1%), and those who visited FM clinics for follow-up were 61% less likely to be treated by a board-certified physician (OR: 0.39) and more likely to be discharged during that visit. Most causes of referral were related to therapeutic issues and did not differ between board-certified and non-board-certified physicians. However, the reasons for referrals were inconsistent with a study by Hirsch et al. (2012), which found that most referrals were attributed to diagnostic issues. This can be explained by differences in the availability of diagnostic tools and the nature of cases at health institutions. Notably, referrals requested by board-certified physicians were 2.3 times more likely to be accepted than were those requested by non-certified physicians. This finding might explain the effect of qualification on the practices of FM physicians.

In the present study, patient with a history of one or more chronic diseases had higher referral rate, compared to those with no chronic illness, which can be attributed to a greater requirement for screening and further management in the former group. Referred patients with chronic diseases were less likely to be treated by board certified physicians. Our finding that the highest referral rate was made for patients aged 46–60 years was consistent with an earlier study by Hirsch et al. (2012), as well as the fact that in the Saudi population, most common chronic diseases arise in this age group. We note that the chronic diseases of referred patients, as shown in Figure 2, reflected the chronic diseases common in our area.

This study had some limitations that should be considered in future studies. First, Total referral rate by clinic's type, FM Physician's gender and qualification was not detected. Second, the data collection period of 2 weeks may be considered short, although we note that our study included all referred cases during these 2 weeks and exceeded the required sample size.

Conclusion

Our results lead us to conclude that the physician's qualification plays an important role in patient referral decisions. Specifically, we observed differences in patient referral between board-certified and non-board-certified physicians in our study.

Recommendations

We recommend that further studies address this subject. Particularly, we recommend a case-control study design between physicians with high and low levels of qualification to detect similarities between cases and controls via matching and restriction and to measure differences in referral issues within the study population. A larger sample size and the inclusion of more than one health institution would better demonstrate variations in referral parameters and allow comparisons. The use of a primary data collection method would also allow the investigator to strength the validity of the findings and improve data completeness.

Acknowledgement:

We give special thanks to our families for their patience and continuous support. Also, We would like to thank Editage (www.editage.com) for English language editing.

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