Evaluation of reference reports received in a university public service in Endocrinology in Belo Horizonte

Avaliação dos relatórios de referência recebidos em um serviço público universitário de Endocrinologia de Belo Horizonte

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ABSTRACT

Introduction: the reference and counter-reference system (RCR) defines a hierarchical flow of assistance to patients and/or communication among professionals. The reference is a document that requires consulting and/or forwards patients to other doctors (consultants) who draw up a reply document, the counter-reference. In Brazil, the RCR system does not work well, and no study has systematically evaluated it. **Objectives:** to evaluate reference reports from health services from Belo Horizonte (PBH), municipalities in the metropolitan region of Belo Horizonte (RMBH), and the General Hospital from UFMG (HC) elaborated by general practitioners (GP) or specialists (ESP) and received in the Endocrinology Service from the GH, and define the necessary information in reference to enable the consultant to decide for a face-to-face consultation. The doctors who work in the Family Health Program (FHP) or secondary and tertiary care doctors were considered GPs. **Methods:** this was an observational and sectional study. **Results:** two researchers (k = 0.652) evaluated 282 reports and identified that 62% could have been assisted in the primary care. The frequency of reports with enough information for decision-making was greater in those from the GH and elaborated by specialists. A greater number of reports were accepted when presenting endocrinology diseases and physical and complementary examination data. **Conclusions:** most of the referred patients presented disorders that could have received care in the primary care; a reference report must contain a diagnosis and data from additional tests and physical examination.

Key words: Primary Health Care; Referral and Consultation; Academic Medical Centers; Consultants.

RESUMO

Introdução: o sistema de referência e contrarreferência (RCR) define um fluxo hierarquizado de atenção aos pacientes e/ou de comunicação entre profissionais. A referência é um documento que demanda uma consultoria e/ou encaminha pacientes a outros médicos (consultores), que elaboram um documento-resposta, a contrarreferência. No Brasil, o RCR não funciona bem e não há estudos que o avaliem sistematicamente. Objetivos: avaliar relatórios de referência provenientes de serviços de saúde da Prefeitura de Belo Horizonte (PBH), de municípios da região metropolitana de Belo Horizonte (RMBH) e do Hospital das Clínicas da UFMG (HC), elaborados por clínicos gerais (CLN) ou especialistas (ESP), recebidos no Serviço de Endocrinologia do HC, e definir informações necessárias em referência que permitam ao consultor decidir por interconsulta presencial. Foram considerados CLNs os médicos que atuam no Programa Saúde da Família (PSF) ou clínicos da atenção secundária e terciária. Métodos: trata-se de estudo seccional e observacional. Resultados: dois pesquisadores

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(k=0,652) avaliaram 282 relatórios, sendo constatado que 62% poderiam ser abordados na atenção primária. A frequência de relatórios com informações suficientes para a tomada de decisão foi maior naqueles oriundos do HC e elaborados por especialistas. Maior número de relatórios foi aceito quando apresentaram doenças próprias da Endocrinologia, dados do exame físico e dos exames complementares. Conclusões: a maioria dos pacientes referidos apresentava transtornos abordáveis na AP e um relatório de referência deve conter diagnóstico, dados dos exames complementares e do exame físico.

Palavras-chave: Atenção Primária à Saúde; Referência e Consulta; Centros Médicos Acadêmicos; Consultores.

INTRODUCTION

The lack of health services assisting the population is a global problem that is compounded in countries like Brazil, given the scarcity of resources and absence of effective traffic of information. The reference and counter-reference system (RCR), an interface between the various levels of health care, has a prominent position in any health care system, public or private, with implications for patient care, permanent education, and financial cost.

In Brazil, the Unified Health System (SUS) has been extended to the entire Brazilian population since the enactment of the Federal Constitution of 1988 under public funding. The system was organized to be decentralized, hierarchical, and with primary care (AP) as its main gateway like those in other countries such as England, Canada, and Austrália.[1] Thus, the definition of needs in patient care and use of available resources is the responsibility of the AP doctor. It is expected that he is able to drive most of the nosological context prevalent in the community without the need for other levels of care.[2]

The secondary care (AS), performed by specialists, should be understood as an assistant care to the AP. In it, patients are always referred by a physician. Access to AS must be filtered by the need and severity of cases, and not the interests of the physician requesting the reference. In AS, the approach tends to be fragmented, focused on diseases, organs, or pathogenetic mechanisms. The professional is able to deal with more specific and/or complex problems, including those unusual.

The RCR system can be an effective tool for promoting permanent education. The proper counter-reference is the formative training and seems the most practical way that can be used because it is a feedback factor linked to the concrete activity.[3-5] It allows a continuous and never-ending learning process inserted in the professional practice, such as in healthcare, in general, and particularly in those working in AP, with little time available for education activities and classroom training.

In Brazil, the RCR system does not work well, and there are no studies systematically assessing it. The excess demand makes it impossible to schedule first consultations with specialists; it is also observed that many of them can be performed by general practitioners, and because of this,[6,7] the Special Service for Diagnosis and Treatment in Endocrinology and Metabolism (SEEM) of the General Hospital (HC) from UFMG has developed a system of distant ambulatory consultation since 1998 that provides customers with a hierarchy of instruments for interconsultations: cell phone or landline, fax and email, in addition to consolidating the traditional referral system for medical consultations.

The RCR system starts with the preparation of a reference report (RR), which in Belo Horizonte, is generally written and delivered to the patient, who is responsible for presenting it to the service to which he has been referred. However, there is much disagreement between the consultant doctors and those consulting about the ideal content of the RR.[1,7-10] Anyway, the improvement of RRs and communication between AP doctors and specialists can avoid repeating diagnostic investigations, dissatisfaction, and loss of the confidence of patients in the medical practice.[11]

Therefore, the aim of this study was to evaluate RRs sent to the SEEM from the HC-UFMG and set the parameters for the decision making by the consultant in addition to understanding the quality of RRs establishing the profiles of customers, consultants, and patients.

MATERIAL AND METHODS

A total of 282 reference reports received by the SEEM HC-UFMG in the period from January 1 to June 30, 2004, coming from the health care services of the Municipality of Belo Horizonte (PBH), municipalities in the metropolitan region of Belo Horizonte (MRBH), and HC were analyzed. That number corresponded to all the reports received during the period. This was a quantitative cross-sectional design study.

RRs were analyzed by two researchers according to the established protocol for this research, considering the suggestions of Crossley and White.[3,12] The evaluation started with the general description of

the data on institutional origin, gender, specialty, and time since graduation for the consultant doctor; request reason; readability; use of standardized forms; information: clinical history, physical examination, complementary tests, diagnosis, treatment, planning, severity, psychiatric disorders, socioeconomic status, and adhesion; patient age; and request destination (sufficiency for the decision and acceptance to schedule). The request destination had three alternatives: schedule for endocrinology (acceptance), non-scheduled (refusal), and insufficient (in need of more information). Subsequently, requesting groups set up according to the institutional origin were compared – HC, PBH, and RMBH – and specialty of the consultant doctor – general practitioners (CLN) and specialists (ESP).

Doctors working in AP in the basic units of the Family Health Program (PSF), in clinical medicine and internal medicine, were considered as CLNs. Surgeons, Gynecologists, and others who work in AS were considered ESPs.

Three groups were defined regarding the diagnosis: (A) consisting of problems that can be dealt within AP; (B) consisting of endocrinology disorders; (C) consisting of disorders still with no definite diagnosis.

Group B include the disorders that CLN referred to as: thyroid nodules; thyrotoxicosis; thyroid cancer; diabetes mellitus type 1 (DM1); diseases of the hypothalamus and pituitary; diseases of the adrenal glands; secondary hypertension (endocrine); gonadal dysfunction; hirsutism and hyperandrogenism; gynecomastia; disorders of sexual differentiation; puberty endocrine disorders; disorders of mineral metabolism and bone metabolic diseases; severe and refractory dyslipidemia; hypoglycemia (non-related to DM), and endocrine disorders in pregnancy.

Group A consisted of: primary hypothyroidism, diffuse goiter, chronic thyroiditis, pre-diabetes, diabetes mellitus type 2 (DM2), dyslipidemia, and isolated obesity. Regarding DM 2, we highlight that there are situations considered suitable for evaluation by the endocrinologist: uncontrolled DM 2 with rapid weight loss (days to a few weeks); doubts as to the best pharmacological approaches to DM 2, especially insulin and new drugs (or those lacking experimental data); and DM 2 evolving with complications.

It is noteworthy that these criteria were developed by endocrinologists who also act as AP clinicians. Doctors who prepared the RRs and those evaluating the request will be referred to consulting and consultants,

respectively. The scheduled RRs or referred to another sector were considered sufficient for making decisions.

The rejected RRs were:
- with problems that could be dealt at AP (group A) and without evidence of a specific need from the consultant doctor;
- without a definite diagnosis (group C) and no evidence of having an endocrine disorder, especially in the absence of severity;
- with endocrinology problems (group B) already solved.

Some RRs in group C were pending when evidence of severity was nonexistent, and the data suggested endocrine disease. The pending status means waiting for further information to be reassessed.

This study was approved by the Ethics Committee of UFMG, and the statistical analysis was performed using SPSS 12.0 for Windows. The analysis of differences between groups (HC, PBH, and RMBH) and specialties (CLN and ESP) was performed using the chi-square test (X^2), with a significance level of 5% ($p < 0.05$).

The K index (Kappa) was calculated to analyze concordance between the decision taken by the two researchers based on the data obtained in the pilot test in SPSS. The following classifications were used: $K < 0.20$, poor concordance; 0.21 to 0.40, regular concordance; 0.41 to 0.60, moderate concordance; 0.61 to 0.80, good concordance; and 0.81 to 1.00, optimal concordance.[13]

Multivariate analysis was performed using the binary logistic regression model to obtain the adjusted measure of the influence of various factors affecting the variables on the consultant's decision. The binary logistic regression model was built considering the sufficiency for decision and scheduling acceptance as dependent variables. Reports that were accepted or declined were considered sufficient for a decision. The selection of independent variables was performed using the stepwise method with the forward conditional selection (entry criterion and conditional probability).

RESULTS

Overall description of reference reports

Out of the consulting doctors who prepared the RRs, 65% came from the HC, 59% were men, 65% were specialists, and 51% had more than nine years since

graduation. Most RRs were prepared in standardized forms (95%), legible (98%), and contained the requesting reason (97%). It was observed that 78% of RRs presented at most two information for diagnosis (81%), clinical history (29%), complementary tests (27%), treatments (24%), and physical examination (11%). It was found that 62% (n = 248) of RRs presented diseases that could be dealt at AP. After the consultant's analysis, 50% were accepted for scheduling and 77% were deemed sufficient for a decision.

Reference reports according to institutional origin (HC, PBH, RMBH)

RRs separated by institutional origin were different in the following parameters: specialty and time since graduation for consultant doctors, use of a standardized form, information number, and request's destination.

RRs derived from HC (versus non-HC) were mainly prepared by specialists (88% vs 19%; X^2 = 107.4, p <0.001) and by doctors with less than nine years since graduation (56% vs 35%; X^2 = 8.9, p = 0.003), written in standardized forms (98% vs 89%; X^2 = 12.7, p <0.001), and often unscheduled (38% versus 8%; X^2 = 27.3, p <0.001). The presence of four or more information data was more frequent in RRs from PBH (45%) when compared to the other institutions (17%) (X^2 = 19.63, p <0.001).

Reference reports according to information sufficiency for decision-making

The institutional origin, specialty, and diagnostic group (A, B, or C) were significantly associated with information sufficiency for decision making. The frequency of sufficient RRs was higher in those from HC (84% vs 63% non-HC; X^2 = 14.9, p <0.001) and produced by ESP (90% vs. 54% non-ESP HC; X^2 = 37.4 p <0.001). When the analysis was conducted separately by institutional origin, this difference (CLN vs. ESP) remained only in HC (93% vs. 28% ESP CLN; X^2 = 50.9; p <0.001). The diagnostic group B showed higher frequency of sufficient RRs than groups A and C (87% vs. 72%; X^2 = 8.05; p = 0.005). The diagnostic group C (still undiagnosed disorders) did not present the highest frequency of insufficient RRs. When analyzed separately by institutional origin, this difference (group B vs. non-B) remained only on non-HC RRs (X^2 = 13.4, p <0.001).

Regarding information, the sufficiency was also influenced by physical examination (93% vs 75%; OR = 6.87, IC (95%) = 1.24 to 70.00, X^2 = 6.9, p = 0.009), and complementary exams (85% vs 74%; OR = 2.56, IC (95%) = 1.08 to 4.71; X^2 = 4.9, p = 0.027).

The binary logistic regression analysis showed that specialty, diagnostic group, complementary exams, and readability were independent factors for information sufficiency in the consultant's decision (Table 1, model 1).

Reference reports according to the specialty of the consultant doctor

RRs from non-HC CLN were more frequent than those from HC (81% vs 12%, X^2= 108.7, p <0.00001), featuring the most often clinical history (44% vs 31%, X^2= 4.0 ; p = 0.045), diagnosis (38% vs 19%, X^2= 5.7, p = 0.017), treatment (53% vs 28%, X^2= 12.5; p = 0.0004), and three or more information (56% versus 28%, X^2= 15.9; p = 0.0001).

The RRs CLN were less sufficient for the decision drawn up by ESPs (24% vs 71%, X2 = 38.7; p <0.00001). No difference was observed on acceptance of RRs, however, the refusal rate was higher in those prepared by CLN (vs ESP) (46% vs 2%; X2 = 37.5, p <0.00001).

Table 1 - Multivariate analysis of factors that influence sufficiency

	Variable	Beta Coef.	*Odds Ratio*	IC (95%)	Valor p
	Specialty(CLN)	-2.928	0.053	0.019 – 0.151	<0.001
Model 1	Readability	2.606	13.541	1.093 – 167.7	0.042
	Complementary tests	1.344	3.833	1.192 – 12.331	0.024
	Diagnostic group (B)	2.133	8.441	2.366 – 30.114	0.001

Decision concordance between researchers

The decision on the request destination was carried out by two researchers and compared with the K index; the value of 0.652 (SPSS) was found, which indicates that there was good concordance.

DISCUSSION

Under the endocrinology consultant's perspective in public and university services, it was observed that most patients referred to endocrinology (62%) had disorders that could be addressed by the clinician (CLN) in the primary care (AP). This study also suggests that, to evaluate the relevance of referrals, the reference report (RR) must be legible and contain the following information: consultant's specialty, diagnosis, most relevant data of the clinical history, physical examination, and complementary tests. RRs made by specialists and coming from the university hospital seemed more than enough for the consultant's decision-making.

This study showed that most of the references contained endocrine disorders that are part of the body of knowledge for AP, such as type 2 diabetes, dyslipidemia, obesity, and primary hypothyroidism. Elwyn and Stott[14] retrospectively evaluated 168 RRs issued by a single general practitioner to several specialists and concluded that 35% of RRs could be preventable, based on available resources and skills of the doctors involved. Jenkins[15] concluded that 13% of 234 RRs sent to several specialists were inadequate, particularly those made by clinical specialists. Donohoe et al.[7], in a prospective study with general practitioners (consulting doctors) and specialists (consultants), found that 30% of the references were inappropriate, with a resolution equal to that made by general practitioners.

The higher frequency of inappropriate RRs or those that could be dealt by AP in this study (62%), compared with other studies, can be partially explained by the difference in the definition herein presented of what is appropriate. The analysis was based on what constitutes endocrinology disorders from the perspective of a specialist. This competence was not analyzed under the perspective of the consulting or requesting physician. In any case, it is emphasized that the two researchers in this study are doctors who act as endocrinologists and general practitioners (general clinicians).

Other studies comment that there are also other factors that could potentially influence the reference adequacy, such as temporal aspects, if late or early; size and complexity of the problem; solving capacity[7], quality or consulting/communication between the clinician and specialist; medical and legal aspects such as patient's interests or needs; different perspectives of the specialist, clinical, patient, or system administrator; assessment of the problem evolution;[16] existence and quality of protocols; secondary or marginal aspects such as readability and insufficient information, especially the motive of the consulting doctor. This fact may be related to the characteristics of the health system in Brazil, highlighting the difficulties faced by AP doctors such as an excessive demand of patients, limited access to complementary propaedeutics, and lack of support, which increase their chance to practice defensive medicine with an excessive use of available resources, including referral to secondary care (AS).

Anyway, a dialogue between those involved in the RCR system interface stands out as needed. Therefore, this study shows that the concordance between the researchers was good (k=0.652), however, in the context of assessing RRs by teachers in the university service, a higher concordance should be expected. This can be partly explained by the profile of the researchers. One is a clinical endocrinologist acting in teaching, research, and extension in an outpatient endocrinology clinic; the other is a clinician advised in his master's degree by the first doctor, working in the internal medicine clinic, teaching, in endocrinology research, and his professional training. These profiles, amid a more flexible definition of refusal, generated a wide variation in the researcher's decision.

This study analyzes the instrument that initiates the process of communication between AP and AS, the RRs. Gandhi et al.[9] and Wright et al.[17] affirm that RRs plays a critical role in an effective communication, and it is also important for the quality of care.

Depending on the objective limitation of meeting the excessive demand of patients, it was essential to investigate what information should compose an RR in order to allow the decision by the RCR consultant where the request for a specialist consultation undergoes medical and administrative evaluation considering relevance and priority levels. It is noteworthy that the analysis of the information that should compose an RR for non-face-to-face consulting purposes was not the objective of this study because RRs had a

strong component of "transfer" of a patient to another service and not of an actual consultation, be it conventional or not.

Consideration should be given to a consultant role being influenced by the SEEM-HC's role in the process of developing a non-face-to-face outpatient consulting system focused on continuous medical education. Thus, inadequate specialist referrals could have a "not accepted" destination and those from CLN could be more often allocated as pending by asking additional information as a strategy to establish a communication channel. The influence of the consultant's specialty in the information sufficiency for the decision remained only in RRs from HC when institutional origin was analyzed separately. Probably, RRs from HC CLN were less accepted and more insufficient (dependent on additional information) due to the greater involvement within the university campus and medical training (graduate and residency).

No controversy about the importance of the RR and its capacity for effective RCR was observed. Indeed, Grol et al.[18], studying 637 RRs from general practitioners in AP, observed suitability of RRs by specialists when they had four or more information data, particularly clinical history, physical examination findings, complementary investigations, and previous or current treatment institution.

Regarding RR contents and comparing those with reports from other authors,[11,18] data from clinical history and physical examination were less frequent in this study; no difference in the frequency of other contents was observed. Importantly, in all studies, 90% or more of RRs had at least one type of information such as clinical history[19,20], diagnosis,[21] and requesting reason. These differences can be attributed to the characteristics of consultants, specialties, use of a standardized printed form, nosological complexity, and the institutional origin of the consultant.

It is important to consider that the mere presence of the diagnosis did not influence the decision, the group (A, B and C) to which the case belonged did. Thus, one can infer that an RR with endocrine disorders in group A, that could be dealt at AP, and group C, undiagnosed, should contain other information to justify the referral. The same was observed by Linné[22] whose analysis of RRs referred to a specialist service in obesity showed insufficient information, suggesting as the explanation the fact that many consultant doctors considered the obesity diagnosis enough to justify the referral.

In this study, the diagnostic group B was more accepted for scheduling and less refused or allocated as pending. The analysis of this aspect by Kvame et al.[23] suggests the need for a joint definition of the field of action based on a committee analysis for every specialty with AP representatives to better guide physicians in interconsultation requests. It also proposes the need for changing attitude on both sides, suggesting that the patient care be achieved in a joint effort.[23]

With regard exclusively to the number and the information, unrelated to the synthesis that means the consultant's decision, this study showed that reports from PBH or prepared by CLN were more complete, with more information and more often with data for clinical history, treatment, physical examination, and complementary tests. This probably reflects the fact that CLNs (most RRs coming from PBH) tend to more integrated and with comprehensive approaches seeking better resolution of patient problems. This contrast can not be explained by the difference in complexity or type of disease because the groups' profiles (A, B, and C), and those of endocrine disorders (data not shown), were similar.

The parameters that RRs must contain for decision making were not clearly defined. However, some considerations can be made. As expected, the diagnostic group was associated with information sufficiency for the decision. Also, some data from the physical examination and complementary tests probably influenced because this information tend to be more objective. The institutional origin and consultant's specialty was significantly associated with information sufficiency. This does not mean that the evaluating doctor considered these parameters in the decision but that some characteristics of consulting doctors are contained in them. For example, in educational institutions, there is a tendency to keep patients internally, under the attention of specialty services, regardless of the problem's complexity. In fact, HC RRs were more often not scheduled. There is an overlap between institutional origin and specialty, shown by the very high correlation between them. One could consider that readability influenced the researchers' decision. Although logical, this was not a problem because the readability was high. Moreover, and most likely because of this, the data from this study regarding readability were weak, with very a wide confidence interval and its lower limit close to OR near to 1.

As for patients, Preston et al.[24] reported that many feel as if they had been left in the "limbo" when sent to different sectors of the health system.

CONCLUSIONS

This study showed that a significant fraction of referrals to a clinical specialty, such as endocrinology, could be avoided. It is suggested that this could be done with an improved communication between AP and AS. To effect a pact of criteria defining diseases that can be dealt at AP and specialties is essential, that is, the role of the medical field in AP and AS should be better defined reducing uncertainties in this interface. The reports should also be improved, not only those for reference but also those for counter-reference. This study suggests, for example, that diagnostic and clinical data from the physical examination and complementary tests are important. It is important that the physicians involved further enhance the RCR system. Hence, they should recognize that the RCR, besides its assistance-oriented character, can be a powerful instrument of permanent education.

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