Acute Low Back Pain: Is Gatekeeping Second Best?

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ABSTRACT: **Background:** Low back pain is a common problem managed by primary care physicians and orthopedic specialists.
Objectives: To evaluate the outcome of new LBP episodes in patients who chose to visit either an orthopedist or their general practitioner.
Methods: All patients visiting the orthopedist or physician during the study period were screened for a new complaint of LBP. After the initial visit the patients were interviewed by phone using a structured questionnaire, with a follow-up interview one month later. The study was performed at Clalit Health Services primary care and consultation clinics. A random sample of 125 GPs and 17 orthopedists were chosen. Consecutively recruited were 166 patients who visited the GP and 75 the orthopedist. The main outcome measures evaluated were perceived complaint severity and degree of disturbance to everyday functioning, problem resolution, and health services utilization.
Results: Patients who decided to first visit the orthopedist indicated a higher disturbance to everyday functioning (75% vs. 70%, $P < 0.01$), were invited for further follow-up visits (6% vs. 51%, $P < 0.05$) and had more computed tomography and bone scans (20 vs. 3%, $P < 0.001$ and 9 vs. 2%, $P < 0.05$, respectively). Health status after one month showed that patients who chose the GP were more likely to have their problem solved (36 vs. 17%, $P < 0.05$).
Conclusions: Symptom resolution for a new LBP complaint was significantly higher in patients who decided on the GP, even when controlling for severity of illness and degree of disturbance to everyday functioning.

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The technology revolution of the last two decades has resulted in increased expenditures on health services. Health provider organizations are seeking ways to reduce expenses by eliminating non-essential components in the health care process without compromising the quality of care. A crucial element in cost control has been the use of the primary care physician as a "gatekeeper"; this competent general practitioner decides whether or not a specialist opinion is needed. In Britain, The Netherlands and Canada, the gatekeeping concept has been adopted as essential to cost containment. In the United States, the uncontrolled growth of subspecialties in health services has raised the expectations of the public for an expert for every symptom, and only in recent years has there been a reversal in this trend [1-5].

Data from a health insurance plan in Canada indicated that 61% of expenses accounted for 1891 specialist visits, and the remaining 39% for 3723 primary care visits [1]. A health plan with 25,000 visits per year showed that every 100 referrals to specialists by family practitioners during a 6 month period was followed by 345 additional specialist referrals, 47 hospitalizations, 7 ambulatory surgical procedures, and 128 inpatient surgical procedures. In a population-based study, an average of 0.56 referrals per patient per year (range 0–61) was observed, and approximately 1 in 20 (5.1%) office visits led to a referral [3,5,6].

The general practitioner's familiarity with his/her patients – the product of continuity of care – has been shown to influence the number of tests ordered, drugs prescribed, and referrals to specialists and the emergency room [7,8]. In another study, the GP's gender and socioeconomic status, as well as larger cities with medical schools, were found to be significant factors affecting referrals to specialists [5]. Yet, gatekeeping might be perceived as "second best" [9].

The budgets of the health management organizations are based mainly on a capitation formula. Thus, recruitment of new members has become a key issue for financial viability of the HMOs, with aggressive media marketing and internal marketing techniques being mobilized. Clalit Health Services, the largest HMO in Israel, decided to promote direct access to "specialist physicians" as a selling point. As the decision for direct self-referral was made exclusively on the basis of marketing considerations, little attention was paid to the issues

LBP = low back pain
GP = general practitioner

HMO = health management organization

of quality and cost-effectiveness of a direct access versus "gatekeeper"-determined model of specialist consultation.

Lower back pain has a point prevalence of 12% to 33%, one year prevalence ranges from 22% to 65%, and lifetime prevalence ranges from 11% to 84% [10]. It is a prevalent complaint that is managed by both GPs and orthopedists. The main objectives of the present study were to evaluate a new outcome of visits for LBP in patients according to who they chose to visit first – orthopedist or GP.

PATIENTS AND METHODS

Health services in Israel are provided by four HMOs, the largest of which is Clalit, covering 54% of the population. The study was performed in Clalit primary care and consultation clinics. Patients with LBP can choose who to visit first – an orthopedist or their GP. The study was conducted during the period 1998–2000.

STUDY POPULATION

A random sample of 125 primary care and 17 orthopedic practices was chosen from all of the eight Clalit districts. In each district 15–20 primary care and 2–3 orthopedics practices were chosen. All patients visiting these clinics during the study period and on the GP's 5 working days were screened for a new complaint of LBP. A new complaint was defined as a back pain for which the patient had not visited the orthopedist or the GP during the previous 3 months. Patients with previous back problems or surgery were not excluded.

Patients who met the inclusion criteria of a new complaint were interviewed twice by phone: 3–4 days following the initial visit and a month later. A structured questionnaire was used. The time frame of one month was chosen to reduce recall bias and to give enough time for the treatments to take effect. Adolescents were interviewed after informed consent was obtained from one of their parents.

Table 1. Demographic characteristic of the study population with LBP

	First seen by GP (N=166)		First seen by orthopedist (N=75)		
	N	%	N	%	*P* value
Gender					
Male	76	41%	23	36%	
Female	90	59%	52	64%	< 0.05
Age (yrs)					
0–18	16	10%	2	3%	
19–45	93	56%	42	56%	
46+	57	34%	31	41%	
Mean ± STD	46.77 ± 18.63		44.00 ± 17.02		NS
Range	8–80		14–77		
Family status					
Married	107	65%	49	65%	
Single	31	19%	18	24%	
Other	27	16%	8	11%	NS
Education (yrs)					
0–12	97	76%	45	68%	
13–16	22	17%	17	26%	
17+	8	6%	4	6%	NS
Mean ± STD	11.56 ± 3.62		11.48 ± 3.60		
Range	0–25		0–18		

STUDY DESIGN

The initial questionnaire following the first office visit included demographic characteristics, patient satisfaction and previous use of health care services, LBP intensity, perceived severity and functional disturbance, and questions about the process of care (laboratory tests, imaging, prescriptions, referrals, procedures, and follow-up visits).

The follow-up questionnaire (one month later) included information on outpatient clinic visits, treatments and clinical outcomes (symptom resolution, severity, functional status) during the weeks after the initial visit.

Perceived severity of complaint, level of disturbance to functioning, and satisfaction, were all measured on a scale from 0 to 10 where 10 indicated the highest in severity, disturbance to functioning, or satisfaction. Since we were evaluating the subjective patient's perception of severity and function we used similar scales as those used for pain or dyspnea.

All data were entered using epinfo 6.1 and analyzed with the SPSS statistical package. Analyses of categorical variables included the chi-square test, with $P < 0.05$ indicating statistical significance. Continuous variables were analyzed using the ANOVA test.

RESULTS

Of the patients with LBP who visited the GP first – after removal of incomplete or lost to follow-up records – 180 patients met the inclusion criteria and of these, 9% refused to participate in the study. Of those who visited the orthopedist first, 79 met the inclusion criteria of whom 5% refused to participate. Thus, full interviews were conducted in 166 patients who decided to visit the GP first and 75 patients who decided to visit the orthopedist first, for a new LBP complaint.

Table 1 presents the characteristics of the study population by type of physician for the first visit. More women with a complaint of LBP decided to visit the orthopedist than the GP (64% vs. 59%, $P < 0.05$). Patients who decided on the orthopedist indicated a mildly higher disturbance to

everyday functioning (75% vs. 70% respectively, $P < 0.01$), while there was no difference in perceived severity. They indicated higher satisfaction with quality of care at the first visit (8 and above on a 0–10 scale, 92% and 79% respectively, $P < 0.05$). Orthopedic specialists ordered significantly more follow-up visits (68 vs. 51%, $P < 0.05$ respectively). No differences were found in self-reporting of previous health services utilization (number of visits to specialists in the last month, number of emergency room visits in the past year, number of hospitalizations in the past year), and health status. Patients visiting specialists indicated more visits to the GP in the month prior to the present visit, compared to the patients who decided to visit the GP (two or more visits, 44% vs. 14%, $P < 0.0001$).

OUTCOME ONE MONTH AFTER THE FIRST VISIT

The LBP problem was solved significantly more often (36% vs. 17%, $P < 0.05$), and disturbance to everyday functioning (not at all/very little) was lower (38% vs. 19%, $P < 0.05$) in patients who decided to first visit the GP. Most of the patients who visited the GP, 51% compared to 39% ($P < 0.001$) of patients who visited the orthopedist, went for a follow-up visit, although more of those who visited the orthopedist were invited for follow-up. Patients visiting the specialist had more CT scans and bone scans (20% vs. 3%, $P < 0.001$and 9% vs. 2%, $P < 0.05$, respectively). Patients visiting the GP had more blood tests (16% vs. 3%, $P < 0.05$). There were no differences in terms of prescriptions, ER visits, hospitalizations, operations and special procedures. For the majority of patients in both groups, complaint severity decreased and functioning ability increased with no statistically significant differences [Table 2].

To control for the impact of severity on the patients' decision regarding who to visit, high severity patients (noted 8 or above) were evaluated separately. While there were no differences between the two groups in disturbance to everyday functioning, satisfaction with the GP and quality of care at the initial visit, we noted that problem resolution after one month was higher in patients who decided to visit the GP first (30% vs. 15%, $P < 0.05$). Disturbance in everyday functioning after one month was also lower for patients choosing the GP (31% vs. 9%, $P < 0.01$) [Table 3]. In most patients in both groups, complaint severity decreased (70% and 53% of patients visiting primary care physicians vs. specialists respectively) and functioning ability increased (53% and 51% respectively).

Total resolution of the problem was explained by younger age group, better health status (those who noted good/excellent health status were nearly five times more likely to have their problem solved compared to those with poor health; $P < 0.0001$), and visiting the GP first [Table 4]. Improvement in

ER = emergency room

Table 2. Patients with LBP – visit outcomes and health service utilization (one month from the initial interview)

	First seen by GP (n =166)		First seen by orthopedist (n =75)		
	n	%	n	%	P value
Symptom resolution					
Problem solved	60	36%	13	17%	‹ 0.05
Problem not solved or worse	106	64%	62	83%	
Change in complaint severity between initial and follow-up visits*					
No change	29	28%	27	43%	
Severity increased	8	8%	3	5%	NS
Severity decreased	67	64%	32	52%	
Change in degree of disturbance to everyday functioning between initial and follow-up visits*					
No change	43	41%	29	47%	NS
Functioning ability increased	53	50%	32	51%	
Functioning ability decreased	9	9%	1	2%	

*Only for patients whose problem was not solved

Table 3. Patients with LBP – visit outcomes and health service utilization (one month from the initial interview)

	First seen by GP (n =103)		First seen by orthopedist (n =75)		
	n	%	n	%	P value
Symptom resolution					
Problem solved	31	30%	8	15%	‹ 0.05
Problem not solved or worse	72	70%	47	85%	
Change in complaint severity between initial and follow-up visits*					
No change	19	27%	20	43%	
Severity increased	2	3%	2	4%	NS
Severity decreased	50	70%	25	53%	
Change in degree of disturbance to everyday functioning between initial and follow-up visits *					
No change	29	41%	22	47%	NS
Functioning ability increased	38	53%	24	51%	
Functioning ability decreased	4	6%	1	2%	

*Only for patients whose problem was not solved

Table 4. Logistic regression model results for predicting which patients will have their LBP problem solved*/ameliorated

	Problem solved				Condition improved		
Variable	**Odds ratio**	**95% confidence interval**	***P* value**	**Variable**	**Odds ratio**	**95% confidence interval**	***P* value**
Gender				**Gender**			
Male	1		NS	Male	0.88	0.45–1.73	NS
Female	1.08	0.58–2.02		Female	1		
Age (continuous variable)				**Age**			
(per year of age)	0.97	0.95–0.99	< 0.01	(per year of age)	0.98	0.96–0.99	< 0.05
Health status				**Drug prescribed**			
Poor	1			Yes	2.24	1.13–4.45	< 0.05
Moderate	3.28	1.33–8.08	< 0.01	No	1		
Good + Excellent	4.99	2.04–12.19	< 0.0001				
Physician type				**Physician type**			
GP	1			GP	1		
Orthopedist	0.35	0.16–0.72	< 0.01	Orthopedist	0.52	0.26-1.03	0.06

*Excluded from the model:

Initial complaint severity, initial level of functioning, performance of tests, satisfaction with quality of care, satisfaction with physician attitude, chronicity, marital status, country of birth, years of education, economic status, religiosity, medications.

the condition was attributed to younger age group, medication (those who were prescribed medication were 2.24 times more likely to recover compared to those who were not), and visiting the GP first. Furthermore, level of functioning, chronicity, tests performed and other social demographic variables were not found to be significant.

DISCUSSION

In patients with a LBP complaint who chose to visit the GP, their medical problem was solved, the severity of their problem decreased, and there was an increase in their everyday functioning at the same levels and even better, compared to those who decided to visit the specialist first. Orthopedists ordered more follow-up visits, though patients did not necessarily comply; and they ordered more expensive tests. Some could argue that this might be the case since the more severe or complex cases were examined by orthopedic specialists. Nevertheless, thorough examination of the subgroup of patients with perceived high severity complaints (8+) showed identical trends as described above.

When the orthopedist orientation is extrapolated to the primary care setting, the consultation costs will rise irrespective of the medical outcome [11-14]. Since specialists consulting within the framework of the HMO are hospital based, with their work in the HMO setting supplemental to their income, it is a highly relevant point in the Israeli medical setting.

A study examining patients' preferences for care by general internists and specialists for common medical conditions found that nearly 100% of the patients thought that their family doctor was able to take care of usual medical problems and better able to prescribe medication for depression and LBP [15]. This is further exemplified by a study showing that a shift of care can be accomplished for acute back pain from the orthopedists to GPs and for chronic back pain from spine orthopedists to medical specialists with improved outcomes. There was an improvement in 76% of surveyed chronic back pain patients. The estimated cost saving per year was $400,000 in manpower costs and specialty billing was reduced by 20% [16].

An observational study of patients with acute LBP who were treated by GPs, chiropractors, and orthopedic surgeons showed that time to self-reported recovery did not differ between these disciplines [17]. Another study reported that GPs wrote the most prescriptions for LBP; orthopedic surgeons and neurologists ordered more radiographs of areas other than the chest [18,19]. A Norwegian study on how general practitioners manage patients suffering from LBP found that 81% of the patients were examined clinically, 40% were referred to X-ray or CT, 31% to an appropriate specialist, 32% to a physiotherapist and 11% to a chiropractor, and 79% were given a prescription [20]. These referral rates are higher than those found in our study, though their inclusion criteria covered all cases of LBP and not only new episodes. A further longitudinal German study showed, as in our study, that consulting a specialist was the strongest predictor for imaging and therapeutic intervention [21].

It is further argued that low back pain in the population at large is not usually a surgical problem and the chances of pathological findings requiring surgery or other forms

of intervention may be less than 1%. In addition, since LBP in most patients is not a neurological, orthopedic or neurosurgical problem, consultation with these disciplines, unless there are strong suspicions otherwise, has limited value [19].

The limitations of this study include the fact that variables of psychological distress (such as depression, somatization, anxiety) that could influence the choice of physician as well as more detailed past health utilization experience were not measured. However, when contemplating direct/self-referral to specialists, it should be taken into account that more patients with psychosocial problems will self-refer. It might be preferable for the family physician who knows the patient to monitor his or her treatment throughout.

Our findings are unique as the literature search yielded few studies in this area that compared the primary care and specialist settings while controlling for severity of complaint and degree of disturbance to everyday functioning. Furthermore, the study focuses on the patient's perception in order to understand the key determinants of who the patient will choose to see first – the GP or the specialist. It is based on "felt need and severity," whereby the patient's own experience with the health system or with previous episodes of LBP is part of the system of considerations each patient brings to the decision-making process. We did not evaluate these aspects in our study. Our intention was to compare differences in outcomes after the patient's decision. We chose this medical condition because it is commonly referred to the orthopedic specialist.

As a direct consequence of this study we believe HMOs may consider a marketing campaign emphasizing that family physicians are not "second best" in the management of low back pain. Health care systems should educate their population on the appropriate use of the personal physician and should continually reinforce this notion.

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"When someone shares something with you from which you benefit, you have a moral obligation to share it with others"

Chinese proverb