Marjan Kljakovic

Patients and tests

A study into patient understanding of blood tests ordered by their doctor

Background

Patient understanding of diagnostic tests is important in general practice. This study describes how patients understand information about their tests, using blood tests as an example.

Method

A survey of patients attending two hospital blood collection centres in Canberra in the Australian Capital Territory.

Results

An 89% response rate (n=135): 90% of patients understood the reasons for tests but only 19% could name them; 86% reported that their doctor explained their tests and 89% reported they understood their doctor's explanation. Doctors offered 35% of patients a copy of test results. Patients who knew their general practitioner were more aware of preparations needed for undertaking blood tests ($p<0.001$). Thirty-six percent would seek information from the people working at blood collection centres.

Discussion

Patients understood the reasons blood tests were ordered, although only a few could name them. A strong relationship was found between doctors explaining blood tests and patients understanding the reasons for tests. Nevertheless, information sharing was at a low level.

Keywords

doctor-patient relations; communication; general practice; research; pathology; patient education

A functional patient-doctor dialogue is at the core of diagnostic decision making in general practice.[1] Patients are active in this dialogue by expecting their general practitioner to explain the purpose of diagnostic tests.[2] Studies show that such explanations satisfy patients' expectations of what doctors should do in relation to diagnostic tests and perceived omissions can lead to decreased patient satisfaction.[2–5] Patient beliefs and attitudes toward diagnostic tests are important in all aspects of general practice. A request for diagnostic tests by a patient can be both pervasive and influential. For example, GPs found consultations with new patients challenging when the patients were specific in their request for diagnostic tests.[6] Such patients were quite likely to receive them.

Information theory defines information as the reduction of uncertainty between the receiver and the source.[7] In the context of this theory, a doctor is defined as the source of information and the patient the receiver of information. This theory is useful in that it provides a testable definition of a patient as a receiver of information. In the context of blood testing, the patient is defined as being informed once their uncertainty about the test has been allayed. Furthermore, the theory provides a testable definition of a doctor as a source of information. In the context of blood testing, the doctor explains the test to the patient before the patient goes to the blood collection centre or gives the patient a copy of the test result once obtained from the centre. In both instances, the doctor is defined as behaving as a source of information for the patient.

Previous studies show that patients prefer to receive information about all test results.[8] A case of a doctor failing to ensure that a patient received test information on time[9] appears to have influenced the advice in The Royal Australian College of General Practitioners *Standards for general practices* on how patients should receive information on tests.[1] Such advice does not refer to any research on how patients are offered or receive information about tests.

This study aims to describe how patients report their understanding of information about blood tests. It describes how patients report doctors offering information about blood tests and how patients seek, receive and worry about the information contained in their tests. The study tests two null hypotheses: there is no relationship between doctors explaining blood tests to patients and patients' understanding of those tests; and there is no relationship between doctors offering a copy of test results and patients' interest in receiving the copy.

Method

The study took place at one pathology collection centre at a public hospital and one privately funded collection centre in a private hospital in Canberra (Australian Capital Territory). These sites were chosen based on an estimated medium level of patient flow (between 20 and 40 patients an hour). The data collection occurred over 10 sessions on Wednesday or Friday mornings between 07.30 hours and 11.00 hours at the two sites.

All patients over 18 years of age entering the collection centres for blood tests were recruited by one of the research assistants at the time patients had their blood collected. Informed consent was obtained from all patients. A 21-question survey collected data on patient demographics, the names of tests requested, understanding of the meaning of the tests requested, what information had been given to the patient by the doctor and by the people working in the collection centre, and the patient's worry about the test results.

Definition of uncertainty

In this study, patients were defined as having reduced their uncertainty about blood tests in two ways. The first was patients reporting their doctor had explained their blood test and they understood the reason for the test. The second was patients reporting being offered a copy of the test results by their doctor, and that they were interested in receiving the copy.

Analysis of data was undertaken through IBM™ SPSS Statistics 19.0 and compared differences between categories using the Pearson chi-square test (with continuity correction) where appropriate.

Ethical approval was obtained from the Australian National University Human Ethics Committee and the ACT Health Human Research Ethics Committee.

Results

Of the 152 people approached, 135 responded (89%). Eight males and nine females refused to participate. *Table 1* shows the characteristics of patients, the number of times they visited clinics, and the type and frequency of blood tests ordered.

Younger patients were more likely to visit their clinical practice once compared to older patients who visited more than once (mean age 42.6 vs 53.8 years, t-test = –2.779, p=0.011).

Patient understanding and the doctor's explanation of blood tests

When asked, 90% of patients (n=122) reported they understood the reasons for blood tests ordered by their doctor for that day, but only 26 (19%) patients could name all their tests, 59 (44%) could name some and 50 (37%) were unable to name any test (chi-square = 24.445, df=2, p<0.001). Most patients (n=116, 86%) reported the doctor had explained what the tests were for and most (n=120, 89%) reported they understood the doctor explaining the meaning of tests.

The doctor offering and patients receiving information about test results

More patients who had been offered a copy of the test result by their doctor were interested in receiving a copy of their results compared to patients who had not been offered a copy by their doctor (89% offered vs 43% not offered, chi-square = 24.493, df=1, p<0.001). Doctors were more likely to offer a copy of results to patients who had regular blood tests compared to patients who had tests irregularly (75% vs 25%, chi-square = 5.398, df=1, p=0.020). Furthermore, more patients were offered a copy of the results when they knew the specialist (n=28, 60%) who ordered the test compared to those who knew the GP (n=13, 28%) ordering the test or not knowing the doctor (n=6, 13%) ordering the test (chi-square = 6.525, df=2, p=0.038).

Many patients (n=88, 65%) had received information about the blood test because they were aware of the preparation needed for undertaking the blood test (eg. the need for fasting) either by having this explained by their doctor (n=54, 61%), or the patients knew themselves (n=22, 25%), or they were told by the collection centre (n=12, 14%), or they were told by other people (n=4, 5%). Furthermore, more patients were aware of the preparations when they knew the GP (n=47, 53%) ordering the test compared to knowing the specialist (n=32, 36%) who ordered the test or not knowing the doctor (n=9, 10%) ordering the test (chi-square = 16.638, df=2, p<0.001).

Table 1. Characteristics of surveyed patients

Characteristics of patients		
Mean age (SD)	52.4	(16.6)
Male	68	50%
Patient knowledge of the doctor who ordered the blood test		
Did not know the doctor	12	9%
The doctor was a GP	57	42%
The doctor was a specialist	66	49%
Number of times patient visited the clinical practice (or hospital) where the doctor ordered their blood test		
Once	17	13%
More than once	118	87%
Characteristics of blood tests		
Haematology	93	69%
Biochemistry	119	89%
Other	77	57%
Frequency of previous blood tests		
First blood test ever	0	0%
• Regularly		
– 1–2 weekly	23	17%
– 1 monthly	14	10%
– 3 monthly	19	14%
– 6 monthly	15	11%
– Yearly	10	7%
• Irregularly	54	40%

Patients seeking information

Some patients (n=49, 36%) would seek information by asking the people working at the blood collection centres about tests being done that day. Females were more likely to seek further information at the centres than males (31% vs 19%, chi-square = 4.868, df=1, p=0.027); as were patients who knew the GP (n=47, 53%) who had ordered the test compared to knowing the specialist (n=32, 36%) ordering the test, or not knowing the doctor (n=9, 10%) ordering the test (chi-square = 16.638, df=2, p<0.001).

A quarter of patients (n=32, 24%) would prefer that there was more information about blood tests available at the blood collection centres.

Patient worry about test results

Among the 15 patients (12%) worried about their test results, 12 (80%) reported their doctor knew they were worried. Patients worried about their test results were more likely to seek information

at the blood collection centres than patients who were not worried (20% vs 6%, chi-square = 4.513, df=1, p=0.0314).

Discussion

This study found 90% of patients reported they understood the reasons for ordering blood tests, although only 19% could name all their tests. The study rejected the first null hypothesis by finding a strong relationship between the doctor explaining blood tests and patients understanding them. Further evidence supporting this hypothesis was finding that most patients who understood the preparation needed for undertaking a blood test had the preparation explained to them by their doctor.

The study could not reject the second null hypothesis because of the low level of information sharing – only 34% of patients reported their doctor had offered them a copy of their test results. The remaining 66% of patients were not offered a copy and therefore decreasing the chances of their uncertainties being allayed. In-depth qualitative studies are required to measure the level of uncertainty in patients who have not been offered copies of their blood test results. Information sharing has been shown to correlate with increased patient satisfaction and with improved health outcomes.[4,10–13] Qualitative studies show that patients prefer to be notified about all test results, including normal results.[14] In this study, patients were more likely to be offered information if they had prior experience of regular blood tests and the majority of these patients were interested in receiving a copy of their test results.

Patients' knowledge of the type of doctor who had ordered a test was variably related to the knowledge they had about their tests in two ways. First, patients were more aware of the preparation needed for undertaking a blood test when they knew the GP who had ordered the test compared to knowing the specialist. Second, patients were more likely to be offered information at the blood collection centres when they knew the specialist who had ordered the test compared to knowing the GP. More research is needed on the dialogue occurring in consultations to identify how patients knowledge of their doctor might reduce the uncertainty patients have about tests.

Gender and patient worry about test results were the only patient characteristics found to have a significant relationship to how patients sought information on blood tests. Females were more likely to seek further information at the blood collection centres. A result consistent with other studies showing females have more of a role in decision making and active participation in healthcare than males.[3,15,16] Second, the minority of patients (12%) worried about their test result are more likely to seek further information at the blood collection centres compared to the majority who were not worried. Community studies show that worry is a major driver for people to use health services in primary care.[17] Qualitative studies show that patients prefer to be notified about test results from a knowledgeable source who can give personalised information.[14] More research is needed on how the personal characteristics of patients can influence information seeking behaviour in general practice.

The main limitation of this study was the small number of collection centres surveyed and we did not survey collections centres based in the community. The results of this study are best seen as a pilot study of how patients report their understanding of information about blood tests – data useful for undertaking larger studies of health information flow in Australian general practice. Second, this study did not investigate how doctors convey information – a bias that is best studied through a linguistic analysis of information transfer within consultations.

Key points

- Patients report they understand the reasons blood tests are ordered, although only a few could name all their tests.
- A strong relationship was found between patients reporting their doctor had explained their blood tests and patients understanding the reasons for tests.
- A low level of information sharing was reported with only a third of patients reporting their doctor had offered them a copy of their test results.
- Information sharing was more likely among patients who had regular blood tests and patients who knew their specialist.
- Patients who knew their GP were more aware of preparations needed for undertaking blood tests.

Author

Marjan Kljakovic MBChB, FRNZCGP, PhD, is Professor of General Practice, ANU Medical School, Academic Unit of General Practice and Community Health, School of General Practice, Rural and Indigenous Health, Canberra, Australian Capital Territory. marjan.kljakovic@anu.edu.au.

Conflict of interest: none declared.

References

1. The Royal Australian College of General Practitioners. Standards for general practices. South Melbourne: The RACGP, 2010.
2. Kravitz RL, Callahan EJ. Patients' perceptions of omitted examinations and tests: a qualitative analysis. J Gen Intern Med 2000;15:38–45.
3. Levinson W, Kao A, Kuby A, Thisted RA. Not all patients want to participate in decision making. A national study of public preferences. J Gen Intern Med 2005;20:531–5.
4. Peck BM, Ubel PA, Roter DL, et al. Do unmet expectations for specific tests, referrals, and new medications reduce patients' satisfaction? J Gen Intern Med 2004;19:1080–7.
5. Epstein RM, Franks P, Shields CG, et al. Patient-centered communication and diagnostic testing. Ann Fam Med 2005;3:415–21.
6. Kravitz RL, Bell RA, Azari R, Kelly-Reif S, Krupat E, Thom DH. Direct observation of requests for clinical services in office practice: what do patients want and do they get it? Arch Intern Med 2003;163:1673–81.
7. Shannon CE, Weaver W. The mathematical theory of communication. University of Illinois, 1949.
8. Meza JP, Webster DS. Patient preferences for laboratory test results notification. Am J Manag Care 2000;6:1297–300.
9. Bird S. A GP's duty to follow up test results. Aust Fam Physician 2003;32:45–6.
10. Sox HC, Jr., Margulies I, Sox CH. Psychologically mediated effects of diagnostic tests. Ann Intern Med 1981;95:680–5.
11. Faden RR, Becker C, Lewis C, Freeman J, Faden AI. Disclosure of information to patients in medical care. Med Care 1981;19:718–33.
12. Greenfield S, Kaplan S, Ware JE Jr. Expanding patient involvement in care. Effects on patient outcomes. Ann Intern Med 1985;102:520–8.
13. Frosch DL, Kaplan RM. Shared decision making in clinical medicine: past research and future directions. Am J Prev Med 1999;17:285–94.
14. Baldwin D, Quintela J, Duclos C, Staton E, Pace W. Patient preferences for notification of normal laboratory tests results: A report from the ASIPS collaborative. BMC Fam Pract 2005;6:1–7.
15. Davey HM, Barratt AL, Davey E, et al. Medical tests: women's reported and preferred decision–making roles and preferences for information on benefits, side-effects and false results. Health Expect 2002;5:330–40.
16. Arora NK, McHorney CA. Patient preferences for medical decision making: who really wants to participate? Med Care 2000;38:335–41.
17. Reinken J, de Lacey A, Salmond CE. Community attitudes to sickness and health: stimulus and response: community attitudes. Government print, 1980.

correspondence **afp@racgp.org.au**