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Referrals to the specialist health service for patients with neck or back pain

ORIGINAL ARTICLE

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Background

National guidelines recommend that patients with neck or back pain who show no signs of improvement after 4–6 weeks be referred to the specialist health service. The referral should include details of medical history, clinical examination and treatment. Limited use of diagnostic imaging is recommended for neck and back pain with no red flags. The aim of the study was to assess the quality of referrals from primary care to the specialist health service for neck and back pain.

Material and method

We reviewed 632 referrals to the Neck and Back Outpatient Clinic at the Department of Physical Medicine and Rehabilitation, Oslo University Hospital, and recorded information on medical history, clinical examination and supplementary investigations. Factors that predict whether a referral was accepted or rejected were identified using regression analysis.

Results

Of the 632 referrals assessed, 524 (83 %) included a medical history with pain anamnesis, 360 (57 %) contained information on clinical examination and 573 (91 %) included MRI findings. The referrals lacked information on current medication use, treatment and employment status in 166 (26 %), 244 (39 %) and 199 (31 %) cases, respectively. Information on medical history, employment status and clinical examination was the strongest predictor of referral acceptance.

Interpretation

The results suggest that about half of patients with neck and back pain undergo a clinical examination before referral to the specialist health service, while nearly all have an MRI scan. Approximately one-third of the referrals were considered to be of low quality, which complicated the assessment of eligibility for specialist evaluation.

Main findings

A large proportion of referrals for patients with neck and/or back pain lacked information.

Most patients had undergone diagnostic imaging before referral, but almost half had not had a clinical examination.

Information on medical history, clinical examination and employment status in the referral was the strongest predictor of whether a patient was accepted for assessment in the specialist health service.

The specialist health service assesses the patient's right to evaluation and treatment in accordance with guidelines, including the Patients' Rights Act, based on referrals from healthcare providers in primary care and related fields within the specialist health service. The national guidelines for referral to the specialist health service recommend that all referrals include information on medical history, which is necessary to assess the need for evaluation in the specialist health service (1). The referral should also include clinical findings, the results of supplementary investigations, any treatment that has been initiated and its effectiveness.

A review by the National Audit Office of Norway (NAO Norway) revealed that many patients are referred to the specialist health service unnecessarily, or without the referring clinician necessarily expecting any clinical benefit from the evaluation or treatment (2). It also found that one in three hospital doctors accept patients for evaluation despite the referral indicating that it is unnecessary (2). This can lead to suboptimal use of the specialist health service's resources. NAO Norway therefore recommends that hospitals disclose information about general practitioners' (GPs) referral practices.

Over 90 % of patients referred to Norwegian neck and back outpatient clinics report pain lasting more than three months, with the largest group (44.5 %) experiencing pain for over two years (3). Non-referral of patients with acute back and neck pain to the specialist health service is in line with both national and international recommendations (4, 5). The national guidelines for low back pain recommend that patients be referred to interdisciplinary cognitive rehabilitation after 6–8 weeks, particularly if treatment in primary care does not result in improvement or if the patient is on sick leave (5). The Norwegian Directorate of Health's prioritisation guide states that functional status, degree of pain and risk factors for long-term problems have a bearing on what patients are entitled to (6).

The main objective of this study was to assess the extent to which referrals to the Neck and Back Outpatient Clinic contain relevant information about medical history, clinical examination and diagnostic imaging, in accordance with the recommendations in the national referral guidelines. We also sought to assess which factors predict whether a referral leads to evaluation in the specialist health service or rejection.

Material and method

The Neck and Back Outpatient Clinic at the Department of Physical Medicine and Rehabilitation, Oslo University Hospital receives just under 3000 referrals annually. The clinic is multidisciplinary and participates in weekly meetings with the Department of Radiology, Department of Neurosurgery and Department of Orthopaedics. In these meetings, medical histories, clinical findings and diagnostic imaging results are reviewed with a view to drawing up an overarching treatment plan for the patient.

The study includes all referrals assessed by an experienced senior consultant (JIB) in the period November 2021 to August 2022. During this period, he assessed all referrals received during one calendar week each month, totalling 632 referrals (approximately 20 % of the total number of primary care referrals). A form was devised to systematically record the referrals. The form contained information on the patient's age, gender, referring clinician, time from referral to assessment, medical history, clinical examination, diagnostic imaging, medications, previous treatment and employment status. The doctor recording the information also decided whether the referral should be rejected or accepted. This decision was also recorded. If the referral was not considered to meet the criteria in the referral guidelines, an overall assessment was made based on the available information. Some patients were brought in for further clarification despite insufficient information in the referral.

The referrals were assessed based on whether they included information on medical history, clinical examination and diagnostic imaging. This was categorised under the variable 'basis for referral'. Medical history was considered adequate if it included the patient's pain history (location, intensity, duration, quality, relieving/aggravating factors), other illnesses and functional status. Clinical examination was dichotomised as yes/no, based on whether the referral included information indicating that the patient had been examined by the referring clinician. Information on diagnostic imaging was categorised according to the body part examined. Diagnostic categories were neck, back or multiple parts of the spine. Information on medication use was recorded as no information, no pain medication, pain medication, C-class drug, B-class drug and A-class drug. No assessment was made of other types of medication. Previous treatment was classified as no information, no treatment, self-managed exercise, physiotherapy including manual therapy, chiropractic treatment, rehabilitation, other treatment and surgery (back/neck or other surgery). Employment status was recorded as no information, employed, student, on parental leave, retired, on sick leave, receiving work assessment allowance, receiving disability benefit and unemployed. The referring clinician was classified as a doctor in primary care, another medical specialist (internal referrals from Oslo University Hospital were excluded), physiotherapist or chiropractor.

Of the 632 referrals, 52 consecutive cases were subject to an independent (blinded) assessment by two experienced specialists in physical medicine and rehabilitation (KM and JIB).

The study is a quality assurance project and did not therefore require approval from the Regional Committee for Medical and Health Research Ethics. No personally identifiable information was recorded. The data protection officer at Oslo University Hospital reviewed the project (23/14897).

Statistics

Frequency (percentage) was calculated for the different variables. The chi-square test was used to compare the proportion of MRI scans among patients with and without clinical examinations. Cohen's kappa (for two categories) and Fleiss' kappa (for multiple categories) were used as measures of agreement between two doctors' independent assessments of 52 referrals. We applied the

following interpretation of kappa values: 0–0.2 indicates no agreement, 0.21–0.40 is minimal agreement, 0.41–0.60 is moderate agreement, 0.61–0.80 is close agreement, and 0.81–1.0 is almost complete agreement (7). The logistic prediction model LASSO (Least Absolute Shrinkage and Selection Operator) was used to investigate which factors impact on whether a referral is accepted or rejected (8).

Starting from the maximisation problem in logistic regression, LASSO does not allow the sum of the coefficients to exceed a given parameter, lambda. To solve this, the coefficients are shrunk towards zero, and some are set exactly to zero. This results in a less complex model, a regularisation, with a lower degree of multicollinearity. Lambda is estimated using cross-validation. Uncertainty estimates for the coefficients were obtained through bootstrapping (n = 5000), with lambda remaining constant in each sample (8). This model was chosen because we wanted to investigate which factors predict whether a referral is accepted or rejected, without having a relevant a priori reference model to rely on.

All variables from Table 1, except waiting time (not related to information in the referrals) and basis for referral (a combination of other variables), were included in the model. We also included a dichotomous variable indicating whether the referral mentioned multiple previous types of treatment, and a variable for the referring clinician. All variables in the model were categorical, and after dummy coding, they amounted to a total of 31. For the dichotomous variables, 'No' was used as the reference category, while 'NI' (no information) was the reference category for the categorical variables. For age, the group 46–67 years was used as the reference category.

Of the 632 observations, 620 are included in the LASSO model (12 were excluded due to incomplete data). All analyses were performed in R 4.2.1 (9). The LASSO model and kappa values with corresponding confidence intervals were estimated using Glmnet and Psych (10, 11).

Results

Of the 632 referrals included, 337 related to female patients (53 %), and the median age (min.–max.) was 48 (13–87). A total of 450 referrals (71 %) were assessed during the course of five days. A total of 367 referrals (58 %) related to back pain, and 145 (23 %) to neck pain. The remainder involved both neck and back issues. The number of referrals rejected was 186 (29 %) (Table 1). A total of 581 referrals (92 %) were from GPs in primary care, 26 (4 %) were from other primary care providers and 18 (3 %) were from the specialist health service, while 7 lacked information on this.

Referral quality

A total of 524 referrals (83 %) included an adequate medical history, and 360 (57 %) contained information indicating that the patient had undergone a clinical examination (Table 1). A total of 416 referrals (66 %) lacked

information on at least one of the following variables: treatment received in primary care, medication use or employment status.

A total of 573 patients (91 %) had undergone a spinal MRI. There was no statistically significant difference in the proportion of MRI scans between those who had been clinically examined (330/360) and those for whom no information about clinical examination was available (243/272) (p = 0.39).

Reliability

Seven out of ten kappa values for agreement between the two doctors (*n* = 52 referrals) were above 0.7, and all were greater than 0.4 (Table 2). The percentage of agreement ranged from 98.1 % to 76.9 %. Agreement of 76.9 % corresponds to disagreement on 12 out of 52 referrals. There was 88.5 % agreement in the assessment of adequate medical history, and the kappa value was moderate. KM assessed the medical history as inadequate in 17 % (9/52) of the referrals. The corresponding figure from JIB was 13 % (7/52) in the sample and 17 % (108/632) of all referrals.

Regression analysis

Five variables were identified by the model as relevant predictors. Table 3 shows the estimated coefficients for these five variables, along with their confidence intervals. Adequate medical history and clinical examination are the variables with the strongest predictive power.

For a working patient aged 46–67 years with an adequate medical history, a clinical examination and no information on medication use, the model predicts an 84 % probability that the referral will be accepted. For a similar patient without an adequate medical history and a clinical examination, the probability is 52 %.

Discussion

A review of referrals to the Neck and Back Outpatient Clinic at Oslo University Hospital shows that many referrals lack information. Based on the data, just over half of the patients had been clinically examined, while more than 90 % of the referrals included an MRI report. Patients were more likely to be assessed by the specialist health service if the referral included their medical history, findings from a clinical examination, and a status of employed.

We found that the information was incomplete in many referrals, which is consistent with a report from NAO Norway (2). The proportion of referrals with information on clinical examination in our study is somewhat higher than in a study of patients referred to chiropractors (12). In a survey among GPs, 80 % stated that they examined patients with neck and back problems (13). The discrepancy may be due to a lack of documentation of the examination in the referral, overreporting, or regional differences. Another possible explanation is that primary care clinicians who examine patients are less likely to refer the patient to the neck and back clinic.

NAO Norway's report shows that 40 % of GPs believe they could treat more patients with musculoskeletal pain if they had more time. This is something the authorities should take seriously as musculoskeletal issues are the primary cause of morbidity and lost work capacity (14). Recent research supports the idea that GPs can teach patients to better manage back pain, and can reduce the use of MRI and sick leave (15). In addition, Abrahamsen et al. have shown that a conversational tool can help reduce symptoms in patients with medically unexplained symptoms, including back and neck pain (16).

Clinical guidelines in most countries recommend that in cases of back pain, healthcare personnel should take a patient's medical history and perform a clinical examination, including a neurological assessment, whether nerve root involvement is suspected or not (5, 17, 18). Our study suggests that most referrals contain adequate information about medical history, but often lack descriptions of clinical examination, medication use, previous treatment and employment status.

Current guidelines recommend limited use of MRI for neck and back pain, but consistent with previous studies, we found that a large proportion (91 %) of referred patients had had an MRI scan (19). A Japanese study showed that only one in five patients with significant radiological stenosis had clinical symptoms (20). MRI findings increase with age; over 30 % of 20-year-olds have disc changes compared to almost all 80-year-olds (21). It is therefore concerning that referrals contain more information about imaging performed than thorough medical histories and clinical findings. This information is necessary for interpreting and conveying MRI results. Patients frequently arrive at our department in an anxious state about MRI findings that are, in fact, normal age-related changes. This has caused unnecessary worry for patients and can have a negative impact on the prognosis. Consequently, it is perhaps not surprising that two-thirds of patients believe MRI findings are more important than clinical examination findings, and that nearly half would opt for neck surgery based solely on MRI findings, even if they have few or no symptoms (22).

In the prioritisation guide for hospital doctors, there is considerable scope for individual judgement regarding which patients should be granted the right to health care. Both the quality of the referral and differences in the interpretation of the referral text can lead to disagreement. Disagreement was greatest for adequate medical history (6 out of 52 referrals). Since the same person classified the medical history and decided whether the referral should be accepted, it is not surprising that this variable has strong predictive power. It is also uncertain whether these results can be generalised to other outpatient clinics. The aim is to ensure consistent assessment of all referrals, with as little subjectivity as possible. We will therefore review this process with a view to improving consistency in assessments and devising a guide that GPs can access on our website. We will provide information about this via the collaborative forum between primary care and the specialist health service.

In the analysis of factors that predicted whether a referral was accepted or rejected, several categories lacked information, which introduced uncertainty into the analyses. It may seem unreasonable that the use of strong pain

medications (opioids) was associated with referral rejection, but the Neck and Back Outpatient Clinic does not have a tapering programme for such medications, and such referrals are instead forwarded to the pain clinic. Age should not impact on the assessment but we found that it does play a role in whether patients are accepted by the outpatient clinic. One possible reason is that the oldest age group may have previously had their condition assessed at our clinic, while for younger patients, we are more likely to accept referrals that do not meet the criteria.

A methodological challenge in the study is that the same person recorded the information and decided whether the referral should be rejected or accepted, which may have influenced the assessment in a way that differs from normal practice. Nevertheless, the rejection rate was about 30 %, which is consistent with the average at our department both before and after the study.

Conclusion

We concluded that 43 % of the referrals to a multidisciplinary back outpatient clinic lacked information about clinical examination, and that an MRI scan was often requested despite this. The referrals also frequently lacked details about medication use, previous treatment and employment status. Identifying factors that increase the likelihood of a referral being accepted could promote a more standardised referral process. This will facilitate the work of both the referring clinician and the specialist.

The article has been peer-reviewed.

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