Does routine pain assessment result in better care?

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BACKGROUND: Although a variety of national organizations such as the Canadian Pain Society, the American Pain Society and the Joint Commission on Accreditation of Health Care Organizations have advanced the idea that pain should be assessed on a routine basis, there is little evidence that systematic pain assessment information is used routinely by clinicians even when it is readily available.

OBJECTIVE: To determine whether systematic pain assessment information alters medical practitioners’ clinical practices.

METHODS: A population of seniors with complex medical problems who were evaluated by case coordinators was studied. Case coordinators were assigned to either an experimental or control patient assessment condition. Control condition patients were assessed as usual. In the experimental condition, a psychometrically valid pain assessment battery as well as the Geriatric Depression Scale – Short Form (because depression and chronic pain are frequently comorbid) were integrated into the routine case coordination assessment. A summary of the results of the depression and pain assessments was subsequently sent to physicians via mail and fax. Patients were also given copies of the assessment summaries and were asked to discuss these with their physicians. Physicians’ medication prescriptions were monitored over time through the database of the provincial ministry of health.

RESULTS: At the end of the study, no significant differences between experimental and control patients were found with respect to medications prescribed or patient self-reports of pain. Nonetheless, there was a significant relationship between Geriatric Depression Scale – Short Form scores and pain medications prescribed for patients in the experimental condition. Moreover, indexes of overall pain intensity did not change significantly over time.

CONCLUSIONS: The findings do not support the idea that the availability of systematic pain assessment information leads to change in clinician’s medication practices. As such, educational interventions and public policy initiatives are needed to ensure that treatment providers do not only gather but also use pain assessment information.

Key Words: Assessment; Elderly; Older adults; Pain

A variety of organizations, including the Joint Commission on Accreditation of Health Care Organizations, the Canadian Pain Society, the American Pain Society and the Veterans Health Administration have advanced and stressed the importance of pain assessment (1). However, pain is underassessed and pain problems remain undertreated in a variety of populations including seniors and children (2-5). In fact, the undertreatment of pain in older adults and children is among the most pressing ethical concerns for pain clinicians (3).

Expert consensus groups have also stressed the importance of pain assessment (6-8). Nonetheless, attempts to evaluate the extent to which systematic pain assessment information – other than information gathered during routine medical and other related examinations – is used to make clinical decisions have been very scarce. Such evaluations are important for several reasons. Most importantly, from a health policy perspective, there are cost implications of increased use of routine systematic pain assessment. Given such cost implications and other resource considerations, it is important to demonstrate to decision makers that routine pain assessment affects clinical practices. If it does not affect such practices, more work would be needed to ensure that pain assessment

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Pain Res Manage Vol 14 No 3 May/June 2009 ©2009 Pulsus Group Inc. All rights reserved 211
information is integrated into the decision-making of frontline clinicians.

Although not much work has been conducted on the impact of assessment information on clinicians’ practices, one study that focuses on mental health practitioners (9) has demonstrated that, even when provided with data on standardized measures of psychological functioning, most mental health clinicians do not use these data in their treatment planning or monitoring. Within the pain arena, past research in an outpatient internal medicine clinic failed to find any evidence that routinely measuring pain as a ‘fifth vital sign’ improved pain management (10). Moreover, for more than one-fifth of the internal medicine clinic patients who reported pain, there was no mention of pain in their medical record.

In contrast, one study involving long-term care populations (11) produced promising results. More specifically, Fuchs-Lacelle et al (11) asked nursing staff to systematically and regularly assess pain (ie, approximately three times per week for three months) among nursing home patients with moderate to severe dementia, using a systematic observational procedure (12). A control group of nurses working with a separate group of patients completed an attention control observational measure that was not pain-specific. The results showed that use of PRN (pro re nata – taken as needed) pain medications increased for assessment group patients compared with the control group. Stress levels for nurses who conducted pain assessments also decreased compared with the control group, possibly because the assessment may have reduced uncertainty and decreased behavioural disturbance among long-term care residents (ie, chronic pain is known to lead to increased behavioural disturbances among seniors with dementia [7]). Interestingly, use of regularly scheduled medications did not change as a result of the intervention, possibly because the pain assessment information was either not communicated to the patients’ physicians and/or because physicians did not deem it to be relevant. Despite the aforementioned promising results on the integration of routine pain assessment in the long-term care setting (11), there is very limited research on the effects of integration of routine pain assessment into the care of seniors residing in the community.

For the purposes of the present investigation, we studied seniors with complex medical problems who were being assessed by case coordinators working for the local health region of a mid-sized metropolitan area. Potential participants were asked by their case coordinators if they would be interested in taking part in the study. Eligibility criteria included an age of 64 years or older, participation in an assessment regarding health care services with a case coordinator, and the ability to verbally respond to the case coordinator’s questions regarding health and health care services. Overall, 114 participants completed the study (58 in the experimental condition). An additional 59 participants were enrolled in the study but were not available for a follow-up assessment. Nonetheless, their medication data were included in all analyses that did not involve follow-up assessment scores. Reasons for not being available to complete the follow-up assessment included being too ill, being hospitalized, loss of interest in the study, moving to a long-term care facility and death. A comparison of the participants who completed the study and those who did not showed that the two groups did not differ with respect to demographic variables (ie, age, sex and education).

Information regarding prescribed medication was not available for 71 participants; therefore, they were not included in the analyses, resulting in 173 participants being included in the medication analyses (88 in the experimental condition). The mean (± SD) age of the participants was 80.74±7.86 years and they had 10.79±2.96 years of education. There were no differences between the experimental group and the control group regarding age, sex or education level. A total of 70.4% of participants were women. Data regarding pain and depression scores for the sample are available in Table 1.

Despite its high prevalence, pain tends to be underassessed and undertreated in seniors (4). We hypothesized that patients whose physicians were sent systematically collected and psychologically sound pain assessment information would be prescribed more pain medications (ie, as reflected in either an increase in the dose or number of medications) than patients whose physicians were not sent such information. This would therefore help address the undertreatment of pain in this population. Moreover, we hypothesized that, at a follow-up assessment, experimental condition patients would manifest lower pain scores than patients in a control group. We also hypothesized that there would be a significant association between pain assessment scores and medications administered for experimental patients, but not control patients. Finally, we expected that experimental group participants, unlike control condition participants, would show a reduction in pain and associated distress scores over time.

METHODS

Participants

Participants were community-dwelling seniors 65 years of age or older with medically complex problems who were being assessed by case coordinators working for the local health region of a mid-sized metropolitan area. Potential participants were asked by their case coordinators if they would be interested in taking part in the study. Eligibility criteria included an age of 64 years or older, participation in an assessment regarding health care services with a case coordinator, and the ability to verbally respond to the case coordinator’s questions regarding health and health care services. Overall, 114 participants completed the study (58 in the experimental condition). An additional 59 participants were enrolled in the study but were not available for a follow-up assessment. Nonetheless, their medication data were included in all analyses that did not involve follow-up assessment scores. Reasons for not being available to complete the follow-up assessment included being too ill, being hospitalized, loss of interest in the study, moving to a long-term care facility and death. A comparison of the participants who completed the study and those who did not showed that the two groups did not differ with respect to demographic variables (ie, age, sex and education).

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Procedure

After receiving ethics clearance from both the University of Regina and the local health authority, as well as obtaining the necessary approval from the provincial ministry of health, 23 case coordinators were randomly assigned to a study condition (ie, experimental or control). Case coordinators assigned to the experimental group attended an instructional seminar conducted by the researchers on study procedures, including
administration of the brief Pain Assessment Battery. When entering the present study, participants in the experimental group were administered a brief Pain Assessment Battery by their case coordinator in addition to the regular routine interview. The Pain Assessment Battery included a 21-point box scale (15), the Geriatric Pain Measure (GPM) (16), the Geriatric Depression Scale – Short Form (GDS-SF) (17) and a pain drawing (18). The case coordinator scored the 21-point box scale questionnaire immediately and classified the score on each measure as reflecting ‘below average pain’, ‘average pain’ and ‘above average pain’. These determinations were based on typical scores that were obtained in a pilot study (unpublished data) of a different sample of 46 senior case coordination patients. Scores that were greater than one SD above the mean were deemed to be ‘above average’ and scores that were less than one SD below the mean were deemed to be ‘below average’. The scores for pain from the GPM and GDS-SF, as well as pain locations from a pain drawing completed by the patients, were then entered into appropriate areas of the summary sheet (Appendix A). The summary sheet was then sent to the patients’ physicians with patient consent along with a summary of the results was also mailed to physicians by study personnel.

Three months after the initial case coordination interview, all participants underwent an interview by an independent assessor (ie, a research staff member, not a case coordinator) and were administered the Pain Assessment Battery, along with a brief questionnaire concerning satisfaction with health care services. Although this measure was not scored, the pain drawing was included as meaningful numeric value known as the MQS score. The MQS formula was the product of the detriment weight for the medication class, the amount prescribed for each dose and the number of days (1 = subtherapeutic, 2 = lower 50% of the therapeutic dose range, 3 = upper 50% of the therapeutic dose range, 4 = supratherapeutic). The detriment weight is related to the drug’s potential for abuse or addiction, or the severity of negative side effects. For the purposes of the present study, a modified formula was used because the recommended daily frequency of administration of the prescribed single dose was not available through the ministry of health databases. The modified formula was the product of the detriment weight for the medication, the amount prescribed for each dose and the number of days.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Experimental group</th>
<th>Control group*</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDS-SF</td>
<td>5.17±3.31</td>
<td>4.58±3.11</td>
</tr>
<tr>
<td>Box 21 – day</td>
<td>38.20±31.25</td>
<td>31.93±26.37</td>
</tr>
<tr>
<td>Box 21 – week</td>
<td>48.51±30.37</td>
<td>39.74±26.19</td>
</tr>
<tr>
<td>GPM-D</td>
<td>4.66±2.53</td>
<td>4.02±2.64</td>
</tr>
<tr>
<td>GPM-I</td>
<td>12.87±7.70</td>
<td>11.28±6.98</td>
</tr>
<tr>
<td>GPM-A</td>
<td>2.19±1.60</td>
<td>1.96±1.43</td>
</tr>
<tr>
<td>GPM-S</td>
<td>2.50±0.82</td>
<td>2.21±1.06</td>
</tr>
<tr>
<td>GPM-O</td>
<td>2.39±1.76</td>
<td>1.91±1.63</td>
</tr>
</tbody>
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Data presented as mean ± SD. *Baseline scores were not collected from individuals in the control group. Geriatric Pain Measure (GPM) subscales: A Pain with ambulation; D Disengagement due to pain; I Pain intensity; O Pain with other activity; S Pain with strenuous activity. Box 21 refers to the 21-point box scale. GDS-SF Geriatric Depression Scale – Short Form

This measure was selected because it has been shown to have psychometric properties superior to those of other brief tools used with older adults (20).

GPM (16): The GPM was selected because it is a multi-dimensional assessment tool that has been developed specifically for use with older persons. Respondents answer 22 yes/no questions concerning their pain, as well as two questions concerning the intensity of their pain (ranging from 0 to 10). The following subscale scores are obtained: pain intensity, pain with strenuous activity, pain with ambulation, disengagement because of pain and pain with other activity. Higher scores are indicative of greater amounts of pain. Psychometric properties of the GPM are well established (16,21).

GDS-SF (17,22): The GDS-SF was selected because, unlike depression assessment tools commonly used with younger persons, it avoids the use of somatic items that can confound symptoms of depression with other physical symptoms that are common among older persons. The GDS-SF consists of 15 yes/no questions. Higher scores are indicative of a depressed mood. The GDS-SF is a clinically useful screen for depression among older adults and has evidence to support its validity and reliability among community-dwelling older adults (22).

Pain drawing (18): Respondents are shown a picture of the human body and told to mark where they experience pain. Although this measure was not scored, the pain drawing was sent with the pain summary sheet to provide physicians with additional descriptive information regarding patients’ pain.

Medication index: The index used to quantify medications was based on the MQS-III (19). The MQS-III is a tool that is used to objectively quantify medications into a single clinically meaningful numeric value known as the MQS score. The MQS score is calculated by using a detriment weight assigned for each class of medication multiplied by the dose of the medication (1 = subtherapeutic, 2 = lower 50% of the therapeutic dose range, 3 = upper 50% of the therapeutic dose range and 4 = supratherapeutic). The detriment weight is related to the drug’s potential for abuse or addiction, or the severity of negative side effects. For the purposes of the present study, a modified formula was used because the recommended daily frequency of administration of the prescribed single dose was not available through the ministry of health databases. The modified formula was the product of the detriment weight for the medication, the amount prescribed for each dose and the number of days.
There was also a significant change over time with respect to reported lower pain-related activity avoidance at follow-up compared with baseline, participants in the experimental group were found.

Contrary to expectations, no group differences were found.

To test the hypothesis that experimental group patients would experience reductions in pain levels and associated distress over time, paired samples t tests were conducted to investigate differences between baseline and follow-up scores on the pain variables (15), the GPM (16) and the GDS-SF (17). Results revealed a significant difference on the disengagement subscale of the GPM (t = 2.12, P < 0.05) indicating that, compared with baseline, participants in the experimental group reported lower pain-related activity avoidance at follow-up. There was also a significant change over time with respect to the strenuous activity subscale of the GPM (t = 2.27, P < 0.05), which suggests that participants in the experimental group reported less pain related to strenuous activities compared with their baseline. Nonetheless, overall pain levels, as reflected in the 21-point box scale and the pain intensity subscale of the GPM, remained unchanged.

Linear and linear mixed effects modelling
There were no significant differences between the experimental and control groups with respect to the time that elapsed between the case coordination assessment and the first medication prescription. Of the participants for whom medication data were available, as described in the Participants section above, the average time that elapsed between the case coordination assessment and the first medication prescription was 12.86 ± 12.64 days. Given the longitudinal nature of the data, linear mixed effects regression models with random intercepts at the patient level were fitted with respect to the baseline and follow-up medication index scores for all patients in the experimental and control groups. The goal of the analysis was to test the hypothesis that medication prescription trends would differ between the experimental and control group patients. The analysis enabled quantification of the medication index trends and testing for potential group differences (experimental versus control groups) with respect to medication index scores (ie, medications prescribed). Overall, the medication index scores fluctuated over repeated visits, indicating no systematic trends during the post pain assessment period (medication index including the number of prescribed doses: mean slope = -0.0364, standard error [se] = 1.90, P = 0.98; medication index without including the number of prescribed doses: mean slope = 0.00994, se = 0.026, P = 0.97). The analysis did not suggest significant differences between the experimental and control groups in the mean medication index values or medication index trends over repeated visits.

To test the hypothesis concerning the association between pain, as well as associated distress scores, with medications prescribed, the potential relations between the baseline medication index scores and the corresponding pain scores were examined via linear regression analysis, using the data for patients in the experimental group only. The analysis of the GPM subscale scores yielded only one significant relationship. This was reflected in a relatively strong association between (higher) GDS-SF scores and (higher) medication index scores without including the number of prescribed doses (mean effect = 111.899, se = 50.73, P = 0.03). No association was found between the GDS-SF scores and the medication index with the number of prescribed doses taken into account. No significant association was found between the medication index and other pain scores (21-point box scale and the other GPM subscales).

DISCUSSION
Consistent with the findings of Mularski et al (10), based on research with internal medicine outpatients, our results did not support the notion that providing pain assessment information to front-line medical service providers leads to significant change in clinical practices (as reflected in medical prescriptions). This can be interpreted in different ways. One possible interpretation is that the assessment information is simply ignored. Another possibility is that pain is assessed very well by front-line medical providers and the new psychometric assessment information adds very little. If this were the case, one may expect a reasonable correspondence between medications prescribed (as reflected in experimental group medication index scores) and pain assessment scores in the experimental group because the control group was not assessed at baseline. The results suggested that pain assessment scores were unrelated to the medications administered. This suggests that it would have been beneficial to consider the results of the systematic pain assessment when making medication regimen recommendations, especially considering that experimental and control group pain scores did not differ at follow-up.

It is also important to stress that our brief Pain Assessment Battery approach is more thorough than the less comprehensive approaches to assessment that were used to test the utility of assessing pain as a fifth vital sign (10). In fact, research with older adults has supported the need for a multidimensional pain assessment and provided evidence that less comprehensive, nonmultidimensional approaches are often insufficient (24). Therefore, our finding that the results of a multidimensional pain assessment approach do not appear to have been used by clinicians raises greater concerns than those of previous investigations demonstrating that the results of simpler (ie, less comprehensive) approaches to pain assessment were not used (10).

Despite the absence of improvement in overall pain scores over time, we did find an improvement with respect to pain with strenuous activity and disengagement because of pain among experimental group participants. It is difficult to interpret the significance of this finding in the absence of comparative change data from the control group, who did not undergo a pain assessment at baseline. It is possible that physicians recommended treatments other than medication for the pain problems, but it is unlikely that the observed improvements were due to the assessment information, given that control and
experimental participants did not differ at follow-up with respect to any of the pain indexes.

The findings concerning the absence of change in overall pain indexes over time and the absence of a correspondence between pain levels and medications prescribed are troubling. Specifically, these findings raise concerns because the participants' pain scale scores were quite high compared with scores obtained by other seniors receiving care (20). Moreover, the finding that overall pain scores (i.e., pain intensity and GPM pain intensity subscale) were not significantly reduced from pre- to post-test in the experimental group of patients contributes to the pre-existing literature because it provides further evidence of the undertreatment of pain among older adults within the context of a prospective longitudinal design. The identified association between depression and prescribed medications suggests that physicians may be more likely to attend to pain concerns when they are accompanied by depression. This may be due to knowledge of the high comorbidity between persistent pain and depression (14). Nonetheless, this possibility is open for further study.

As Garland et al (9) have pointed out, a clinician's personal beliefs are usually more influential than scientific evidence (25), such as the evidence derived from psychometrically valid questionnaires. This is rather unfortunate because anecdotal observations and intuitions are subject to many perceptual biases and are less reliable than results derived from standardized assessment tools (25,26). Nonetheless, some limitations of the present study should be acknowledged. In the case of our research participants, there may have been other reasons (i.e., other than the possibility that pain assessment information was ignored) for the outcome of no changes in prescriptions as a function of pain assessment results. For example, it is possible that the assessment information resulted in physicians recommending more nonpharmacological interventions that we were not able to track, given the limitations of the available database. Moreover, it is possible that many patients did not take their assessment summary sheets to their physicians for discussion – although copies of these sheets were both mailed and faxed to the physicians – which could have contributed to the underemphasizing of the pain assessment results. It is also possible that some patients indicated they did not desire an increase in their pain medication. Finally, we note that the patients in the experimental condition underwent two pain assessments; the first was the experimental manipulation, and the second was the determination of whether the initial experimental group assessment led to any differences at follow-up. Although the repetition that only pertained to the experimental group may – although copies of these summary sheets were both mailed and faxed to the physicians – which could have contributed to the underemphasizing of the pain assessment results. It is also possible that some patients indicated they did not desire an increase in their pain medication. Finally, we note that the patients in the experimental condition underwent two pain assessments; the first was the experimental manipulation, and the second was the determination of whether the initial experimental group assessment led to any differences at follow-up. Although the repetition that only pertained to the experimental group may

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**ACKNOWLEDGMENTS:** The present study was funded by the Canadian Institutes of Health Research. The support of the Regina Qu’Appelle Health Region is gratefully acknowledged. Thomas Hadjistavropoulos is supported by the RBC Foundation.