

Exploring The Impact Of Musculoskeletal Problems On Diabetic Care In A Community Health Setting.

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Abstract

Purpose: Many diabetics have musculoskeletal (MSK) problems. The literature suggests that MSK problems may complicate diabetes care. In this study we begin to explore this relationship. **Methods:** This is a retrospective chart analysis of diabetic patients from 3 community clinics north of Boston. Demographic, HgbA1c, medications, visit frequency, referrals and practitioner type data were extracted and tabulated on an annualized basis. The analyzer used standard ANOVA and linear regression using JMP(SAS Cary, NC). **Results:** The chart review covering 2007-2010 had an n = 172. IDDM patients had more visits/year for MSK complaints than NIDDM patients (5.5 v 2.6, p = .06). The higher HgbA1c the more total MSK visits (p = .08). Diabetics with baseline MSK complaints had more MSK visits/yr (7.2 vs. 5.6, p = .06) than non-MSK diabetics, but A1C didn't significantly differ (7.8 v 8.3, p = 0.4). Hispanic patients had more MSK total visits (7.9 v 5.6, p = .0002), fewer referrals (.56 v .71, p = .05) worse A1c (8.3 v 7.6, p = 0.01) than non-Hispanics. Patients were seen more frequently if provider was an NP (1.9 MD v 2.4 Res v 3.6 NP, p = 0.07), but A1C in NP group was worse (7.4 MD v 7.9 Res v 8.5 NP, p = 0.1). **Conclusions:** Musculoskeletal complaints influence the frequency of interactions of diabetics with the healthcare system. More frequent visits for MSK complaints may have a secondary benefit of improving diabetic control. Our study seems to indicate disparities in access and care quality for the Hispanic population and across provider type.

INTRODUCTION

It is not uncommon for diabetic patients to present with musculoskeletal complaints and for patients with musculoskeletal disorders to have diabetes. In fact, some musculoskeletal disorders are more prevalent in the diabetic population than in the general population such as rotator cuff tendonitis (5) and frozen shoulder syndrome (1); some musculoskeletal disorders correlate with elevated A1C levels (1). In addition, there is evidence that hyperglycemia may in fact accelerate glycosylation of collagen and increase its fragility (6). Pain in itself is also often a barrier to effective diabetes self-management, and many musculoskeletal complaints are associated with pain. In a busy outpatient practice, deciding whether to prioritize diabetic disorders, which may seem more important to the clinician, versus musculoskeletal disorders, which because of associated pain may seem more urgent to the patient, may become a problem. In one study, diabetic patients and clinicians only agreed 9% of the time that the musculoskeletal complaints were among the top 3 complaints (2).

In this study we wished to explore how much visit time with

diabetic patients is spent on addressing musculoskeletal ailments, and if it is a majority, is diabetes care being neglected, or vice versa. In this study we begin to explore this relationship.

METHODS

With approval of the institutional review board, data from paper charts of community clinics were collected. This is a retrospective analysis (2007-2010) of the charts of 172 diabetic patients being seen in 3 community health centers north of Boston. The names of participants were selected from billing department records based on dual diagnosis of diabetes and MSK complaints like osteoarthritis/DJD, RA, tendonitis, limb and back pain, fibromyalgia, osteoporosis, strains, PMR and other miscellaneous MSK conditions. To be included, subjects had to be diabetic adult patients (age > 18 y.o.) who had been with one of the clinics for > 6 months prior to the chart review. Data for 12 consecutive months of visits were collected for each patient. Demographic, HgbA1c, blood chemistry, medications, visit frequency, type of MSK complaints, referrals, practitioner type and comorbidity data were extracted from the paper charts by the

first author (KG). Data were inserted into an excel spreadsheet for analysis. Data were tabulated on an annualized basis. Data were analyzed by the second author (JS), using ANOVA and linear regression using JMP™ (SAS Cary, NC).

RESULTS

The chart review (n = 172) revealed that insulin using patients had more visits/year for musculoskeletal (MSK) complaints than NIDDM patients (5.5 v 2.6, p = .06). The higher the HgbA1c, the more total musculoskeletal visits/year (p = .08) and more musculoskeletal referrals (p = .05), e.g., to orthopedics.

Older patients had more frequent and more total musculoskeletal visits (p = .03) and women had more frequent musculoskeletal visits than men (3 v 2, p = .07). Self-identified Hispanic patients as compared to non-Hispanic patients also had more musculoskeletal visits/year (3.2 v 2.2, p = .03), more total visits (7.9 v 5.6, p = .0002) but fewer specialty referrals (.56 v .71, p = .05).

Smokers had more frequent visits (2.9 v 2.5, p = .02) than nonsmokers. Diabetics with baseline musculoskeletal complaints had more frequent clinic visits (3.2 v 2, p < .0001), more total visits (7.2 vs. 5.6, p = .06) and more referrals (.67 v .51, p = .07) than diabetics without musculoskeletal complaints.

Hand pain, DJD/OA, shoulder pain, and back pain were the top 4 musculoskeletal complaints in this population. Patients taking non-asa pain medications had more musculoskeletal visits (3.8 v 2.5, p = .03) than those not on non-asa pain medications. Patients with reported pain medicine allergies also had more frequent musculoskeletal visits (4 v 2.6, p = .02), total visits (8 v 6.6 p = .1) and more referrals (.8 v .6, p = .09).

Factors associated with increased musculoskeletal visits but not changes in hgba1c included: gender (3 women v 2 men, p = .07), number of comorbidities (p = 0.03), non-asa pain medications (3.8 v 2.5, p = .03), pain medicine allergies (4 v 2.5, p = .02) and sociodemographic status. MSK visits/yr were highest at both ends of the income spectrum, i.e., patients from ZIP codes with the lowest (11, p = 0.02) and highest median incomes (10, p = 0.02) in our study area. While there was a trend for increased musculoskeletal visits with increasing BMI, it was not statistically significant in our sample.

With regard to providers, patients were seen most frequently if provider was an NP (1.9 MD v 2.4 Res v 3.6 NP, p = 0.07), but A1C control in NP group was slightly worse (7.4 MD v 7.9 Res v 8.5 NP, p = 0.1).

DISCUSSION

Our retrospective study suggests that musculoskeletal complaints appear to influence both the frequency and total number of interactions diabetic patients have with the healthcare system. Patients with both diabetes and musculoskeletal disorders come to clinic more frequently and their A1C shows a trend towards better control. Though somewhat controversial (7), we speculate that bringing patients into more frequent contact with the health care system has a secondary benefit of improving diabetes care by creating more opportunities to address diabetes management.

However, there were exceptions. Despite more frequent visits for NPs, their patients' A1C was worse. We hypothesize that this may be due to selection bias as a majority of the clinic NPs are Spanish-speaking and often have more contact with limited English-speaking patients who may have separate and distinct therapeutic adherence issues. Despite same language practitioners, our study also seems to indicate that disparities in access to care, at least for the Hispanic population, remain even in clinics such as ours that target minority and underserved populations with robust translation and outreach programs.

Not surprisingly, patients on opioid/non-asa pain medications or with allergies to pain medication had more frequent visits to clinic. This is consistent with prior studies with patients with low back pain (11). Even though the median BMI of the study population was almost 35 there was still a trend correlating weight with musculoskeletal complaints. This was to be expected, as obesity is a major burden on the skeletal system; this was illustrated in the studies where gastric bypass surgery decreased musculoskeletal complaints after the weight loss in subjects was studied prior to and post-procedure (12). Also in accordance with prior data was the finding that musculoskeletal complaints of the upper extremity were more frequent in the diabetic population (1,10). Another interesting finding was that patients from the highest and lowest economical deciles had the highest visit frequencies. One possible explanation was that, in our clinic population, the group in the middle may struggle with co-pays and skip visits, as previously reported in literature (9), whereas those

on either end can either afford the cost of visits out of pocket or are substantively subsidized.

A limitation of this study is its relatively small size. It is reasonable to assume that a larger sample could clarify findings that were of borderline significance. Another limitation was that we could not explore quality of life or degree of pain (fifth vital sign) issues as these were not available from the records, but whether it changes quality of pain control remains controversial (13). Finally, we could not differentiate between the visit frequency and musculoskeletal/DM severity based on number of years since first DM diagnosis as these data was typically not recorded for our population in the paper medical records. Possible adding a brief patient survey would augment that study component.

Musculoskeletal complaints appear to influence both the frequency and total number of interactions diabetic patients have with the healthcare system. More visits for musculoskeletal complaints may, by bringing patients into more frequent contact with health care system, have a secondary benefit of improving diabetic control. Our study also indicates that disparities in access to care and diabetic control remain, at least for the Hispanic population. There also seems to be a difference in quality of diabetes control associated with provider level. Our pilot study demonstrates that much more work needs to be done to understand this relationship and to explore the factors influencing it.

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