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Effectiveness of joint specialist case conferences for building general practice capacity to enhance diabetes care

A pilot study in Western Sydney, Australia

Gideon Meyerowitz-Katz, Sian Bramwell, Rajini Jayaballa, Ramy Bishay, Ian Corless, Sumathy Ravi, Linda Soars, Xiaoqi Feng, Thomas Astell-Burt, Manimegalai Manoharan, Mark McLean and Glen Maberly

(Information about the authors can be found at the end of this article.)

Abstract

Purpose – Type 2 diabetes mellitus has become a major concern of Australian healthcare providers. From rates of barely more than 1 percent in the mid-90s, diabetes is now the leading cause of morbidity in the country. To combat the growing diabetes epidemic, Western Sydney Local Health District created the Western Sydney Diabetes (WSD) initiative. One of the key components of the WSD initiative since 2014 has been joint specialist case conferencing (JSCC). The purpose of this paper is to evaluate the JSCC service including both individual- and practice-based changes.

Design/methodology/approach – The authors evaluated the JSCC program by conducting an analysis of patient-level data in addition to a discrete practice-level study. The study aim was to examine both the effect on individual patients and the practice, as well as acceptability of the program for both doctors and their patients. The evaluation included data collection and analysis of primary patient outcomes, as well as a survey of GPs and patients. Patient data on primary outcomes were obtained by accessing and downloading them through GP practice management software by GP practice staff.

Findings – The authors found significant improvements at both the patient levels, with reductions in BMI, HbA1c and blood pressure sustained at three years, and at the practice level with improvements in markers of patient management. The authors also found high acceptability of the program from both patients and GPs.

Originality/value – This paper provides good evidence for the use of a JSCC program to improve diabetes management in primary care through capacity building with GPs.

Keywords Diabetes, Integrated care, Community care, Multi-disciplinary teamwork, Primary care

Paper type Research paper

Introduction

Type 2 diabetes mellitus (T2DM) has become a major concern of Australian healthcare providers. From rates of barely more than 1 percent in the mid-90s, diabetes is now the leading cause of morbidity in the country with estimates ranging from 6 to 9 percent of the population affected, and numbers are thought to continue increasing at an alarming rate (AIHW, 2014, 2016).

The primary cause of this diabetes epidemic is the increase in obesity in the general population, with the average weight increasing by over 4 kg in the last 20 years (Olds *et al.*, 2009; Vic Health, 2011; AIHW, 2014). This creates an unsustainable burden on the hospital system, with the costs of diabetes projected to skyrocket as the disease burden grows (Vic Health, 2011; AIHW, 2016).

One pressing issue for diabetes management is concerns about primary care, due to the complexity and ever-changing nature of T2DM management. Research in a number of countries has identified that T2D care is often compromised by a lack of experience and

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confidence of general practitioners (GPs), particularly regarding insulin initiation and dose escalation (Cuddihy *et al.*, 2011; Polinski *et al.*, 2012; Ishii *et al.*, 2012; Hayes *et al.*, 2008; Harris *et al.*, 2010). Nearly half of Australians with diabetes have an HbA1c level of ⩾7 percent, reflecting a wide-ranging lack of expertise in diabetes management at the community level (Ishii *et al.*, 2012). Diabetes requires integration due both to the complexity of managing the disease and the positive benefits integration produces (Zhang *et al.*, 2015). However, integration across a large number of primary practices is extremely difficult, with $>1{,}000$ GPs and >300 practices in Western Sydney alone.

There are numerous other issues with diabetes in primary care. Common complications of diabetes are often poorly managed due to a variety of factors, leading to potentially preventable morbidity at a later stage (Chwastiak *et al.*, 2017). Moreover, improving care provider knowledge is a key factor in improving care quality and decreasing the negative effects of diabetes in a primary care setting (Stone, 2017). These issues are exacerbated by the short time that primary providers are able to spend with their patients, and the health literacy needs of the patients themselves (Grant *et al.*, 2017). What are initially minor complications, such as incipient retinopathy or abrasions on the foot, can become major issues due to poor management in the primary care setting. Fortunately, these issues can be addressed effectively through organizational initiatives that improve provider understanding and management of diabetes in primary care (Murphy *et al.*, 2017). Case conferencing was introduced on a large scale to the Australian health system in the late 1990s as part of a suite of health planning/assessment tools available for federal reimbursement (David Wilkinson *et al.*, 2002); however, in the intervening period uptake has been sporadic (David Wilkinson *et al.*, 2002). It usually involves a specialist and GP meeting or teleconferencing to discuss the care of a complex patient (David Wilkinson *et al.*, 2002). There is worldwide evidence on the efficacy of GP-specialist case conferencing for complex chronic conditions, with reviews and meta-analyses demonstrating benefits for palliative care (Hollingworth *et al.*, 2016; To *et al.*, 2017), depression (Neumeyer-Gromen *et al.*, 2004), and residential aged care (Crotty *et al.*, 2004), but so far the methodology has only been introduced in a limited fashion for diabetes. Given the complexity of T2DM management, and the evidential support for case conferencing, both federal and state governments have identified it as a potentially useful tool to empower GPs to better manage T2DM in a primary care setting (Australia, C.O., 2017).

This paper focuses on an evaluation of a unique case conferencing intervention carried out in the culturally diverse area of Western Sydney. It looks at acceptability of the intervention from both a GP and patient perspective, as well as a quantitative evaluation of the effect at both an individual and whole of practice level. The paper concludes with a discussion of the limitations and implications that this has for similar programs and broader integration efforts both in Australia and around the world. The purpose of this paper is to review a specific application of case conferencing and discuss how it might be used more broadly as part of a successful integrated care program.

Context and implementation

Western Sydney is a large region of the city of Sydney in the Australian state of New South Wales encompassing about one million people that have been identified as a diabetes "hotspot," with some local government areas having rates of diabetes more than double that of the suburbs to Sydney's east and north (Astell-Burt *et al.*, 2014). It is a highly diverse area, with not only considerable a socio-economic gap between the lowest and highest quintiles of disadvantage, but also culturally diverse with more than half of the population born overseas (WESTIR, 2015). Estimates of the rates of diabetes in this region vary from 8 to 15 percent, with the previous research in Western Sydney showing that at least one third of patients remain undiagnosed. Thus, it has become apparent that our traditional

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hospital-centric models of diabetes care are no longer able to cope with such a huge burden of disease (Hng *et al.*, 2016; Alexander, 2016; Astell-Burt *et al.*, 2014).

To combat the growing diabetes epidemic, Western Sydney Local Health District (WSLHD) created the Western Sydney Diabetes initiative (WSD). This initiative was established in 2012 by WSLHD and their federally funded counterparts in the primary care sector Western Sydney Primary Health Network (WSPHN). It is overseen by the executive management of both organizations, and has a very broad scope covering primary prevention, screening/coaching, community management, and hospital/specialist management of diabetes. The WSD program also includes marketing and social media, in particular a website which contains more specific information about the initiative.

Integrated care is the provision of seamless, effective and efficient care that responds to all of a person's health needs across physical, mental, and social health in partnership with the individual, their carers and family (NSW Health, 2016). It has recently been identified by the Commonwealth of Australia in a Productivity Commission report as one of the most important strategies in improving patient outcomes whilst minimizing cost to the health system (Australia, C.O., 2017). Community diabetes management has been used by the Commonwealth as a specific example where current models of care are not equipped to support optimal diabetes management in the community (Australia, C.O., 2017). Moreover, integration between primary and hospital services using a locally led program has been put forward as the best solution to drive better patient services in areas such as Western Sydney (Australia, C.O., 2017).

This has led to WSD introducing joint specialist case conferencing (JSCC). It fits within the broader WSD program of community and specialist management, with other initiatives including high-risk foot checks, health pathways, optometrist-based eye checks, a GP hotline, risk-stratification for diabetes and integration programs between hospital and primary care. JSCC is a capacity-building service for general practice (GP) that aims to improve the management of diabetes in primary care, enhance integration between hospital specialists and GP, and ultimately prevent unnecessary complications of diabetes that require expensive and unneeded treatment (Hollingworth *et al.*, 2016; Mitchell *et al.*, 2008).

Methods

JSCC

JSCC is a novel method of care integration involving a specialist team visiting the practices of GPs. There are dual aims; to improve individual patient care, but more importantly to educate GPs about diabetes management and provide a closer connection between GP and the hospital. There is clear evidence that such locally led programs can provide improved patient care at a reduced cost, by linking services and educating GPs at the same time (Australia, C.O., 2017). Practices elect for this program, after being identified by WSPHN. GPs identified patients at varying stages of the diabetes journey from newly diagnosed to having many co-morbidities. Patients are booked in and given minimal information by the GP prior to the appointment, in line with what is generally given by the practice when referring to a specialist. Two to four half day JSCC sessions are conducted each week at different practice locations, with six to eight patients in each 30-minute session. Each visit consists of a joint patient consultation and multi-disciplinary case conference. The team from the Blacktown Hospital Outpatient Diabetes clinic includes a Diabetologist, Registrar, Resident, and Nurse Educator. They meet with the GP, Practice Nurse, Practice Allied Health when available, and patient. As part of chronic disease management of patients in GP in Australia many have a care plan. Either this plan or the doctor's diabetes management plan is shared with the hospital team in advance. The management plan is reviewed together and agreed between all participants, and a report and treatment plan is generated. GPs are provided with a telephone support line which provides opportunities for ongoing remote support for their decision making, especially around insulin dose adjustment.

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JSCC can be distinguished from traditional case conferencing in that it is an innovative way to coordinate patient care, involving not only a GP and specialist, but also a diabetes nurse educator and the patient. This novel technique was initially trialed due to the evidence that patient involvement in care has a significant beneficial effect, and as part of a broader integrated care program aimed at addressing the chronic health issues in WSLHD (Egger *et al.*, 2014; NSW Health, 2016). A similar pilot program has also been attempted, with initial – unpublished – evaluation suggesting significant benefits at the patient level with regards to key biometrics such as HbA1c and weight (Margaret Lynch *et al.*, 2016). In Western Sydney, over three years nearly 1,200 patients have participated in JSCC, involving 150 GPs from 50 practice locations.

The primary aim of the program is to upskill primary care providers – first and foremost GPs and practice nurses – in the care and management of patients with diabetes. For this reason, patients often represent a range of diabetes states, from recently diagnosed to those with significant morbidities. The wide range of patients, coupled with a number of case conferences, thus aims to further the education of providers on key management strategies for diabetes in primary care.

This paper reports an evaluation of the program's impact in the first nine months on patient clinical outcomes, a follow-up after three years, an examination of the practice-level impact of JSCC and reflections from the GPs involved.

Evaluation

We evaluated our JSCC program by conducting an analysis of patient-level data in addition to a discrete practice-level study. The study aim was to examine both the effect on individual patients and the practice, as well as acceptability of the program for both doctors and their patients. The evaluation included data collection and analysis of primary patient outcomes, as well as a survey of GPs and patients. Patient data on primary outcomes were obtained by accessing and downloading them through GP practice management software by GP practice staff. Ethical approval for the project was gained through the WSLHD Human Research and Ethics Committee.

Recruitment of survey respondents was through convenience sampling, with almost all GPs involved in JSCC and a smaller number of patients responding.

Our first evaluation was conducted in 2014, and repeated in 2017. We used a longitudinal pre-post single cohort design with two follow ups. We collected data on 41 patients from 19 GP practices. The data were collected at three time points, before the implementation of JSCC, three to six months after its implementation, and a further follow up at three years. Our primary variable was HbA1c test results, and we also collected weight, eGFR, cholesterol (triglycerides, TC, LDL and HDL), and blood pressure.

Patient data from the JSCC program were evaluated using multilevel linear regression models adjusted for age and gender. This included weight, HbA1c, eGFR, total cholesterol, LDL, HDL, systolic blood pressure and diastolic blood pressure.

In addition to this patient-level evaluation, we examined the effect that JSCC had on practices as a whole. We collected data using the PAT clinical audit tool (PATCAT) (PenCS, 2015), which is an anonymised aggregator that provides practice-level information on a variety of variables through extraction from GP practice management software. In this part of the study, we collected information on a number of variables six months pre- and post-JSCC, including the number of patients identified as having diabetes, the number of patients with poorly controlled diabetes, the rates of antidiabetic and lipid-lowering medication prescription for patients with diabetes, the number of patients with diabetes who had recent HbA1c tests, and the number of completed care plans for patients with diabetes. All practices that had results for six months before and after JSCC were included in our evaluation. Data from the practice-level evaluation were analyzed using weighted *t*-tests

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comparing before and after JSCC and weighted by the number of JSCC sessions for each individual practice. Together these two data sources allowed us to investigate both the individual impact of JSCC on patient health and the practice-level impact on GP management of diabetes.

We also conducted evaluations into the acceptability for both GPs and patients. GPs were asked after a session to fill in a short survey asking them to rate JSCC on Likert scales of 1-5 for questions relating to their perceptions, and given the opportunity to make other comments in open text boxes. They were also asked if they would recommend JSCC to a colleague. In total, 75 GPs completed the survey. This survey is given to all GPs at the end of their first conference session (usually involving three to four individual patients), and so represents the experiences of all GPs who took part in the program between March 2014 and July 2017.

Patients were asked to fill out a very brief anonymous questionnaire after the session, using three faces to rate their feelings after JSCC: a smiling face, a blank face and an unhappy face. They were asked three questions relating to their experience. In total, 53 patients completed the questionnaire. This questionnaire was only filled out by patients, who were selected using convenience sampling.

Results

Table I contains patient demographic variables at baseline.

The main body of individual results is shown in Table II. In short, patients who engaged in a single session of JSCC experienced a significant drop in HbA1c of 0.87 (0.39-1.36, $p < 0.001$), a drop in total cholesterol of 0.43 (0.08-0.77, $p = 0.015$) and both systolic and diastolic blood pressure, 6.60 (1.29-11.91, $p = 0.015$) and 4.2 (0.62-7.77) at three to six months after JSCC. These benefits were sustained and indeed exceeded at the three-year mark – aside from systolic blood pressure – with drops in HbA1c, eGFR, total cholesterol, triglycerides, LDL and diastolic blood pressure.

At the individual patient level, there was a clinically meaningful change to a number of important factors influencing patient outcomes.

	Mean (SD)
Age (years)	56.46 (14.60)
% female	46
BMI (kg/m^2)	32.42 (9.22)
HbA1c (mmol/L)	8.93 (1.70)

Table I. Results at baseline

	Baseline	3-6 month review	3 year review
	Mean	Coefficient (95% confidence interval) *p*-value	
Weight	95.66	−2.09 (−4.44, 0.26) 0.081	−2.30 (−4.65, 0.05) 0.055
HbA1c	10.39	*−0.87 (−1.36, −0.39) < 0.001*	*−0.93 (−1.43, −0.42) < 0.001*
eGFR	112.03	0.16 (−3.67, 3.99) 0.935	*−4.35 (−8.14, −0.55) 0.025*
Total cholesterol	5.61	*−0.43 (−0.77, −0.08) 0.015*	*−0.55 (−0.89, −0.22) 0.001*
Triglycerides	1.82	−0.14 (−0.40, 0.13) 0.311	*−0.28 (−0.54, −0.03) 0.029*
LDL	3.19	−0.15 (−0.53, 0.23) 0.434	*−0.38 (−0.73, −0.04) 0.030*
HDL	1.37	0.06 (−0.05, 0.18) 0.280	−0.01 (−0.11, 0.10) 0.895
Systolic blood pressure	112.37	*−6.60 (−11.91, −1.29) 0.015*	−1.68 (−7.07, 3.71) 0.542
Diastolic blood pressure	89.90	*−4.20 (−7.77, −0.62) 0.021*	*−4.61 (−8.24, −0.98) 0.013*

Note: Italic = "statistically significant," i.e. $p < 0.05$

Table II. Individual results at baseline ($n = 43$), three to six months ($n = 43$) and three years after JSCC ($n = 41$)

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Practices

We analyzed the results of 19 practices before and after JSCC. When weighted for the number of JSCC sessions that each practice had engaged in (between 1 and 21), there was a reduction in the proportion of patients who had not had an HbA1c test recorded in the last year of 7.5 percent (3.7-11.4, $p < 0.001$) as well as an increase in the proportion of patients on lipid-lowering medication of 3.5 percent (0.1-6.8, $P = 0.43$). There was a non-significant increase in the proportion of patients identified as having diabetes, the proportion of patients on antidiabetic medication, as well as an increase in the proportion of patients who had poorly controlled diabetes (Table III).

At the practice level, there were indications of significant improvement in diabetes management after JSCC sessions. This is supported by the implementation, which remained the same throughout the evaluation period – the initial team of specialist, registrar and diabetes educator did not change. The resident medical officer rotated every ten weeks; however, this is unlikely to have significantly influenced the implementation. There is some inherent variation between practices using PATCAT, as it is an opt-in service that not all practices take up or use regularly; however, the 19 practices surveyed all had submitted data for the period before and after JSCC, indicating that their use of the system was mostly regular.

Acceptability

Our two acceptability surveys had high response rates for both doctors and patients. The response rate for GPs was 100 percent, whereas patients responded about 50 percent of the time. All doctors who have so far engaged in JSCC in Western Sydney have been surveyed at the end of case conferencing, with 75 responses. On a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), most doctors either agreed or strongly agreed with the six questions asked rating the JSCC program. Figure 1 displays the results from this survey. Questions 1, 2, 3 and 6 received almost universally positive responses, with GPs slightly more uncertain about whether JSCC had helped them to improve their confidence in managing diabetes and whether it would decrease the number of referrals that they made to a specialist.

From the patient questionnaire we saw similarly positive results, with only a single patient reporting negative outcomes on any of the evaluations. Figure 2 contains these results, with patients finding that JSCC made them feel happy, was useful, and taught them a lot about managing their diabetes (Table IV).

Overall, there was a very high level of agreement between patients and clinicians involved in the JSCC program that it was useful and effective.

Discussion

It is known that Western Sydney has one of the least healthy populations in Australia with a total of 57.3 percent of residents having one of four risk factors leading to a much higher

	Baseline	3-6 month review
	Mean	Mean difference after JSCC (95% confidence interval) *p*-value
Percentage poorly controlled (HbA1c > 7%)	35.3	−1.6 (−3.71, 0.42) 0.117
Percentage with no HbA1c recorded for 12 months	18.7	*−7.5 (−3.65, −11.43) < 0.001*
Number of diabetics identified	309	−21 (−91, 50) 0.563
Percentage on antidiabetics	82.1	−1.1 (−3.02, 0.90) 0.289
Percentage on lipid lowering	64.9	*−3.45 (−6.79, −0.10) 0.043*

Note: Italic = "statistically significant," i.e. $p < 0.05$

Table III.
Practice-level results before and after JSCC

Figure 1.
A visual representation of patient-centred care in JSCC

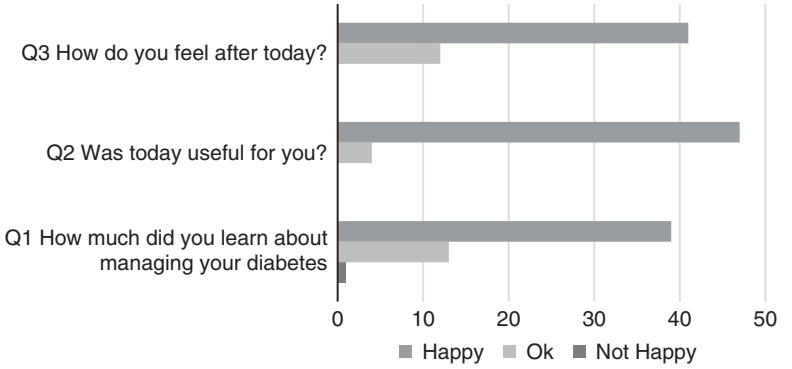

Figure 2.
Patient evaluation of case conference experiences

	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
Q1 – the length of the case conference with each patient was adequate	0	1	1	32	66
Q2 – the CC provides an opportunity to ask clinical questions	0	0	1	29	70
Q3 – the CC provides an interactive learning experience	0	0	1	28	71
Q4 – the experience has improved my confidence to manage diabetes	1	1	5	35	58
Q5 – the experience will decrease my referrals to the diabetes center or endocrinologist	5	4	25	25	38
Q6 – the program improves the relationship and communication between the GPs and specialist	0	0	1	23	75

Table IV.
GP responses to experience questionnaire

incidence of diabetes and respiratory diseases for local citizens. The study found that individual patients improved significantly after a single session of JSCC, and that this improvement was sustained at the three-year mark. Patients experienced clinically significant drops on a range of key markers for diabetes control, and most importantly dropped their HbA1c by 0.93 mmol/L three years after JSCC. This improvement is linked to significant drops in major complications of diabetes such as amputations, retinopathy and

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heart disease. This provides evidence that JSCC is effective for the management of individual patients, and moreover that the benefits can be sustained for a very significant length of time after only a single session.

We also found that there were improvements in key markers of diabetes management for practices that engaged in case conferencing. Not only did they improve their identification of and testing for diabetes, but they also managed the patients more appropriately who had diabetes in terms of medications. There was, however, a non-significant trend toward having more patients with a poorly controlled HbA1c of >7 for practices that engaged in JSCC. We theorize that this is due to the increased testing that we conducted; as practices test all of their patients for diabetes, they reveal a bigger proportion of poorly managed patients who require more intensive care.

Importantly, we identified that both patients and their doctors were strongly in favor of JSCC. Virtually all patients who responded reported that they were happy with the service and thought that it would be useful for them in managing their diabetes. Doctors were almost universally pleased with the program, and often wrote quite lengthy endorsements on their response sheets. Whilst it is always difficult to engage busy clinicians, we found that once we had done a single session of JSCC it was actually harder to move on to another practice. There are some issues here for scalability – although doctors are very happy with the service, it may be important to set a pre-specified number of JSCC sessions to ensure that they do not come to rely on it as a long-term solution for T2DM management.

Combined with the individual patient and practice-level results, this study provides a good case for JSCC as an integrated care intervention that enhances diabetes management in GP. Further quantitative evaluation – in particular a randomized-controlled trial – will be necessary to support these findings more robustly. Whilst there have been a number of evaluations that have demonstrated a benefit for similar case conferencing interventions (Gillett *et al.*, 2015; Hollingworth *et al.*, 2016; Mitchell *et al.*, 2008; Margaret Lynch *et al.*, 2016), we believe the present study to be novel in approach, in particular with respect to the running of case conferences with full patient and clinician involvement. Further study is, therefore, required to determine the number of sessions per participating GP that leads to sustained behavior change as this will be critical in ultimately informing the cost-effectiveness and sustainability of the JSCC work.

We attribute this in part to the comprehensive nature of the WSD initiative, which encompasses considerably more than just a single intervention. In particular, a part of the successes in this program is likely due to our GP hotline, which allows GPs to call up and speak to a hospital clinician whenever they have an issue involving diabetes management.

A key goal of the JSCC program is to improve practice capacity to manage diabetes care. There is evidence that case conferencing is effective and cost-effective at the individual patient level (Hollingworth *et al.*, 2016; Mitchell *et al.*, 2008; Margaret Lynch *et al.*, 2016); however, there are an estimated 130,000 people living with diabetes in Western Sydney. Seeing every patient is simply not realistic. What can be done is to engage the majority of GPs, educate them through a limited number of case conferences, and move on to practices that have not yet benefitted from the program.

The practice management and integration component is even more important when considered in the broader context of Australian – and indeed international – community healthcare reform. Around the world, integration between hospital and GP practices is being linked to better health outcomes, cheaper healthcare and more acceptable care for patients (Australia, C.O., 2017). The essence of our program is local leadership, with both local primary and tertiary organizations being vital to the successful implementation of our JSCC initiative. Without support from local GPs, and without extensive consultation between WSLHD and WSPHN, we would never have been able to reach such a large number of

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patients across the region. This has important implications for generalizability and scalability of our program. Whilst it is likely possible to undertake a similar initiative, the best results will only be seen in an environment with good integrative practices. For example, the current funding structure of the Australian health system has made scaling up JSCC across WSLHD extremely difficult (Australia, C.O., 2017). To bring a JSCC program to the masses, there must be appropriate funding, partnership between hospital and primary care, community support, and most importantly patient by-in. Lacking these elements will likely result in a program that is poorly accepted and as such less effective in the community environment.

Implementation of the program was mostly smooth, with good implications for scaling up or implementing a similar effort elsewhere. Both GPs and specialist teams reported great satisfaction with JSCC, and despite the large number of individual practitioners involved the number of sessions has steadily increased. With the low cost of an individual session – 30 minutes of GP/specialist/educator time – and the demonstrable long-term benefits, there is clearly a place for JSCC in an integrated care approach to diabetes. As the Productivity Commission noted, funding sources do present a challenge (Australia, C.O., 2017), but as GP moves toward a more integrated value-based-care system, it is likely that funding will more closely align with JSCC in the future.

Limitations

There are some limitations to our evaluation. First, this is a simple before/after study with no control group. Whilst the results are striking, it is possible that they are part of a broader improvement in clinical care across Western Sydney that has been taking place in the past few years. This methodology was taken as a pragmatic approach with limited resources, and adds a significant level of uncertainty to the results obtained. Future research may involve linking these patients to a control set and conducting a randomized-controlled trial, which was not possible given the limited resources of the JSCC program in previous years.

It may also be difficult to directly attribute the results to the intervention, given the complexity of the situation and whether the outcomes that were measured are likely to be useful as a guide for a similar effort elsewhere (Datta and Petticrew, 2013).

Given the small number of specialists and diabetes nurse educators involved in this case conferencing program, it was not considered feasible to conduct a quantitative appraisal of acceptability of this program. Future research might use a qualitative methodology to examine the experiences and impacts of JSCC from the point of view of the non-GP clinicians involved in this program.

There are limits to the generalizability of our results. Whilst the patients represented a range of practices from across Western Sydney, we did not collect detailed demographic information and so cannot ascertain how applicable these results may be to different populations.

The practice-level evaluation was based on quite a small number of practices. Whilst there is an effort to look at the effects on a bigger sample, the use of the PATCAT tool has been limited until recently in the region and so accessing the data poses significant issues. The PATCAT tool itself also only offers a small snapshot of the data that we could possible collect to better understand diabetes management improvements in JSCC-engaged practices. We are looking to address this in future studies using a more comprehensive data collection over a longer time-period that will capture more information on the practices involved.

Conclusions

With the number of patients with diabetes skyrocketing across Australia and indeed the world, it is fast becoming impossible to manage each patient through specialist-centric care.

Patients in Western Sydney consistently rate their experience below the state average identifying potential to improve health literacy, self-care and capacity to navigate services to the right care at the right time in the right place. JSCC is an effective and well-accepted tool to improve the management of diabetes in the community, manage difficult patients better, and generally provide a more integrated model of care for diabetes. There remain questions as to how significant the practice-level effects are, but in general it appears to enhance GP capacity to provide diabetes care, and significantly improves the outcomes for individual patients who are engaged in the service.

Despite some limitations, our evaluation provides evidence that JSCC is a useful tool for a more integrated diabetes management program in an Australian setting. Anecdotally, hospital specialists and GPs have reported that the JSCC program has made enormous improvements in their relationships, and has resulted in more integrated patient care across the board for patients living with diabetes in the community.

This paper represents a small but important step in improving diabetes care in the community. With the current funding structures in Australia, there are limitations on scalability of JSCC; however, the current redesign of primary care funding from a fee-for-service model to a value-based-care arrangement brings great implications for expanding this program in the future. Moreover, any location utilizing a value-based-care model would find implementation of a similar program both easy and rewarding: patients may be able to have a single appointment and see long-term benefits in their diabetes care.

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