

Title Issues in the provision of nursing care to people undergoing cardiac surgery who also have Type 2 diabetes

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Short running title: Diabetes care in cardiac surgery

Abstract

There has been little investigation of the issues associated with caring for patients presenting for cardiac surgery with a co morbid diagnosis of diabetes although there is some evidence that the diabetes management is suboptimal. This study aimed to identify issues that patients and cardiac specialist nurses experience with the provision of in-patient services for people undergoing cardiac surgery who also have Type 2 diabetes

A qualitative interpretive design, using individual interviews with patients and nurses, provided data about some of these issues. The study found that nurses had high levels of confidence in their cardiac care but little confidence in diabetes management. Patients described concerns about their diabetes care and treatment regimens. A 'typical journey' for a person with diabetes undergoing cardiac surgery was identified. The findings support the need to build increased capacity in specialist nurses to support diabetes care as a secondary diagnosis.

Key words: type 2 diabetes, cardiac surgery, nursing specialisation, interviews, patient views.

Introduction

Diabetes is a common, chronic and costly disease, which incurs an enormous personal and public burden¹. The growth in diabetes has seen an accompanying increase in the number of people presenting for cardiac surgery with a co morbid diagnosis of diabetes^{2,3}. People with diabetes, presenting for cardiac surgery today, do so in a climate of specialisation: increasing complexity has created the need for nursing services in acute hospitals to follow medical specialisation, so that patients who present for cardiac surgery can expect to be cared for by nurses expert in post-cardiac surgical care⁴. Hospitals also operate in a climate of economic rationalism; health services aim to be efficient, contain costs and simultaneously give high quality care with good outcomes for consumers⁵.

It is difficult to supply nursing expertise in more than the primary category, and one solution has been creating specialist nurse positions to service to all parts of the hospital (for example, Diabetes Nurse Specialists). Patients with diabetes are admitted to all areas of hospitals and ‘roving’ nurse specialists serve the needs of this patient population⁶. Our study aimed to identify barriers to optimal diabetes management in hospital settings where the primary focus of care was cardiac surgery.

This builds directly on our previous work⁷ where participants with diabetes felt that health care professionals they encountered had a poor knowledge of diabetes, which raised levels of anxiety related to their wellbeing and inhibited the development of trusting relationships.

Whilst there is abundant literature on diabetes, there is a paucity of work exploring care of -people with diabetes in the context of co-morbid conditions. Co-morbid conditions are the major reason for hospitalisation for people with diabetes, consequently glucose control and other diabetes related care might not be adequate where the primary focus is on other diseases⁸. Care of diabetes amongst hospitalised patients has been identified as poor^{9,10}, and

poor glycaemic control in hospitalised patients with diabetes can lead to neurological ischaemia, delayed healing and increased incidence of infection¹¹, all of which have significance in the context of cardiac surgery¹². Golden et al. demonstrated an association between postoperative glycaemic control and the risk of infection in cardiac surgery¹³. However, strategies for improving glycaemic control have not been uniformly adopted arguably due to low levels of awareness of available insulins¹⁴ and the limited development of treatment guidelines and standards of care^{15, 8}.

Our study aimed to understand issues nurses and consumers experienced with the provision of in-patient services for people with a secondary diagnosis of Type 2 diabetes. The study focused on experiences of nurses in an acute care cardiac unit and consumers with Type 2 diabetes who underwent cardiac surgery.

For people with Type 2 diabetes who undergo cardiac surgery at the study site, maintaining peri operative glycaemic control involves significant change in their usual management. Insulin infusion and subsequent subcutaneous insulin injections are used until the patient's glycaemic control is stabilised and they resume oral medication. However, many patients are discharged from hospital on altered regimens including the continuing use of insulin, which may become permanent.

Nurses play a significant role in monitoring glycaemic control for hospitalised patients with diabetes. In the cardiac surgical context they have an important role in providing support and education to patients about their postoperative recovery and minimising risk of complications. The management of Type 2 diabetes in this environment is complex.

Methods

Using a qualitative interpretive design¹⁶ we identified both patient and nursing staff perceptions of issues in receiving optimal diabetes care in the context of cardiac surgery. By using triangulation of data sources we were able to draw contrasts between nurse and patient

perceptions of diabetes care. Nurses working in a private sector cardiac surgery unit were invited to participate in individual interviews to discuss what diabetes care involved in the context of their unit. Six registered nurses agreed to participate in the study. Four nurses had post graduate qualifications in cardiac care, two of whom had been practicing in cardiac care environments for more than 20 years and the other two for 7 and 8 years respectively. The remaining two nurse participants were newer graduates, one in her first year of practice and the other in her third year of practice with 9 months experience in cardiac care. Each interview lasted half to one hour and participants were asked about their perceptions of the problems associated with admission of patients with diabetes; their current knowledge about contemporary diabetes management and difficulties they encounter in providing care to people with Type 2 diabetes.

Subsequent to the nurse interviews, 7 patients (6 men and 1 woman) aged between 55 and 86 years were recruited into the study. All were married, living at home with their spouse and had been diagnosed with Type 2 diabetes for between 3-10 years. Each patient was asked to participate in two separate interviews. First, a face-to-face interview was conducted on day 6 or 7 post operatively while they were still inpatients and explored their perceptions of their care during admission, any concerns they had about their care, and any barriers to resolving problems they encountered. Interviews were limited to 30 minutes to ensure that patients were not tired through their participation. With the participant's consent, a second interview was conducted after their discharge. This follow-up interview provided an opportunity to explore any issues arising from their transition from hospital to home and clarify any unclear points from their first interview.

The interviews, conducted by two of the researchers (HC - nurses; CB - patients), were audio-taped and subsequently transcribed verbatim. Data were analysed thematically¹⁷, with team members identifying their own schema of themes through reading and rereading

the transcribed data. Subsequently, findings were shared and similarities and differences in analyses noted. Areas of disagreement required a re-examination of the data as a team and further discussion until agreement on analysis was reached.

Ethics approval was gained for the study both from the university and hospital human research ethics committees. Informed consent was gained from each of the participants prior to data collection.

Results

Results are presented in two sections: Nurse data and Patient data.

Nurse data

Nurse participants agreed that providing post-operative nursing support for people with diabetes following cardiac surgery was complex and identified three major areas of concern for their practice: client related factors; staff confidence and environmental issues.

Client related factors

Nurses reported that patients were not aware of the predictable changes to diabetes management (for example, insulin infusion) that would inevitably occur during their admission. The routine management of diabetes in cardiac surgery has been identified as the 'typical journey' of patients in this study. Nurses were familiar with this 'typical journey': But for patients, these changes were unexpected, and reportedly produced stress and anxiety in patients when they were confronted with more invasive approaches to their diabetes management than previously experienced or expected. Some nurses reported patients directed their anger about these changes at nursing staff.

The population of patients admitted to the study setting were identified by nurses as aged and consequently presented with a range of problems which influenced the level of care required and the way that care might be delivered. Nurses reported patients had problems with short term memory, poor vision and an associated decreased level of dexterity. These factors

in turn influenced patients' ability to support their own diabetes management, particularly if they became insulin requiring post operatively, having previously managed with oral medication or diet.

How is this patient going to [manage], who can't see, who can't dial up their insulin, they can't do their BSL [blood sugar levels].

Additionally patients experienced significant difficulties in learning about changes in their treatment due to their post surgical tiredness and pain which contributed to poor concentration and limited receptivity to learning. These factors, coupled with what nurses referred to as patient rigidity, amplified the complexity of assisting patients to manage new treatment regimens.

They're rigid, they stick to their regimen, they don't like that change to treatment because it puts them out of their equilibrium and they're not sure how they are going to respond to it.

Staff confidence

Nurse participants relayed confidence about their competence in post cardiac surgical care, but were considerably less confident about managing diabetes care. Protocols for insulin infusion and monitoring and managing hypoglycaemia was clear and used with effect. However, troubleshooting problems with glucose instability post operatively, and educating older patients who experienced a profound change to their diabetes regimen were problematic. Nurses also demonstrated poor contemporary knowledge of broad aspects of diabetes care. For example, one senior nurse criticised patients' management of diabetes as using insulin to control their weight rather than following a diabetic diet, "*they are just controlling their sugar with their insulin*". Her comment reflected little understanding of current practice where glycaemic control is central, rather than adherence to strict dietary

measures¹⁹.

Nurses identified their own knowledge deficits as well as limited skill and confidence in patient education, with many reporting a reliance on the Diabetes Educator. Nurses rationalised their poor diabetes knowledge by arguing it was not a core aspect of their role, despite reporting that patients with a co morbidity of diabetes were constantly greater than 50% of their inpatient population. The newer graduates argued their novice status, and more senior staff argued inadequate education provided in both undergraduate and graduate educational programs. As one nurse pointed out, whilst she was:

not 100% confident, but I always know where to go. If I don't know what I am doing, I'll always contact someone to ask. I don't have a problem with that, but I suspect some young nurses do.

The “*someone to ask*” was the diabetes educator, although nurses acknowledged that there was one part time (0.5) diabetes educator for the entire hospital and that they often had a long wait to have her attend their patients. They also acknowledged that sometimes patients were discharged before the diabetes educator met with them.

All nurses identified a need for more formal education within the clinical environment relating to current diabetes management.

Environmental Issues

Nurses identified time and equipment as issues in the workplace environment that influenced their care of people with Type 2 diabetes. Restrictions on available time were evident in a number of ways. First, the rigid routines of meal delivery did not support patient medication regimens. Second, reducing length of post-operative stay for patients was described as rushing patients with inadequate time for educational support. A third and related issue was the limited time of, and as a consequence access to, a diabetes educator. The nurses

uniformly sought the Diabetes Educator's support but it would often be days before she was available. Issues related to time were reported as associated with the current climate of fiscal constraint within health care organisations.

Several participants described problems relating to the equipment used for measuring blood glucose. Problems were created for staff when patients bought their own glucose monitoring equipment to hospital, where there was uncertainty whether this equipment should be used or relied upon. One nurse expressed a concern about the reliability of hospital glucose monitoring machines and the infrequent calibration.

Patient Data

The interviews with patients revealed three dominant areas relating to their hospitalisation: challenges to usual care, who is in control? and invisible contributions of nurses.

Challenges to usual care

On a day-to-day basis optimal diabetes management requires routine, self-control, and finely tuned coping skills^{18, 19}. However, people with diabetes in this study, were, overwhelmed by their cardiac surgical experience which presented them with many unique challenges. The sudden importance of diabetes, and the subsequent adjustment required for this transition, was perhaps the greatest of these challenges. Patients reported needing extensive knowledge and whilst some reported not receiving any information, others reported feeling overwhelmed by the whole experience and could not assimilate the information they were given.

There's so many things on your mind, so I'm not really sure whether I was given, you know I mean. I'm not really sure.

Patients spent an average of 48 hours in the intensive care unit. One man easily recalled his emotional experience, but was unable to remember any information.

...But in intensive care you don't take everything in... Everything gets fuddled a bit.

Information overload was evident, ~~for~~ as exemplified by one participant who, in a 24-hour period, was admitted via emergency, expedited for an angiogram, and taken for surgery.

... I didn't have a chance to prepare for it. You know?

Over the time of hospitalisation patients demonstrated an unmistakable shifting of emphasis. One patient remarked in the first interview that his diabetes '*wasn't a bad case*' however, following discharge, his perspective of diabetes had altered greatly.

As I say, I'm not really worried about this bit any more [points to heart, indicating cardiac surgery] it's more the diabetes than anything else.

Who was in control?

Patient participants recounted constant shifts in who was '*in-charge*' of their diabetes management. Differing perceptions of roles patients and health professionals have in diabetes management were evident. Self identified as '*experts*', patients talked about self-care activities and obtaining knowledge about diabetes. They were able to '*look after themselves*', and had enough experience with diabetes to know what was best for them. But admission for cardiac surgery led to a relinquishing of control of their care. All patients reported becoming passive in their management at some point in their admission, even those very confident and independent in their usual self-management, this was part of the typical journey identified earlier. However, there were differences in how patients responded to control and self care post operatively.

For some individuals, handing over responsibility for their diabetes care while in hospital, led to subservience to the health care professionals caring for them, even when preparing for discharge. Others quickly returned to wanting to manage well themselves.

Taking advice from health professionals regarding their diabetes, they evaluated it, and then made an informed decision about their course of action. Patients termed this as 'collaborating' as each party was involved in the diabetes care to some extent, but neither gave up their actual role. Patients acknowledged their own expertise but accepted medical advice to change their usual routine. Shared control was especially evident when individuals returned home accepting and managing recommended changes to their diabetes regimen.

Invisible Contributions of Nurses

Patients discussed the cardiac nurses in terms of the tasks they performed identifying them as technically skilful. However the knowledge and expertise behind the technical skill of these nurses was rarely acknowledged. In addition, patients identified the absence of any role in day-to-day diabetes education from the cardiac nurses. Thus, the cardiac nurses were 'the invisible nurses' in respect of their knowledge and expertise generally but in the management of diabetes, specifically. Many participants made it clear that they saw nurses to be simply carers.

They take care of the patients. They do everything possible. I mean, after all they are only nurses, they are not doctors or anything...

Nurses were generally perceived to be implementing the wishes and requests of the cardiologist, surgeon or endocrinologist.

Obviously they are under strict control from the doctor ... They rang the doctor, they got the information, the doctor said "give so many shots of insulin" or whatever. They don't take the decision in their hands, you know what I mean?

In contrast patients who were seen by the diabetes educator reported this consultation as very advantageous. Participants also attributed greater credibility to the roles of their

cardiologist, surgeon and endocrinologist, all of whom they saw as expert although most patients stated that their cardiologists or surgeons rarely even acknowledged their diabetes.

Discussion

Our study has highlighted the experiences of patients with diabetes undergoing cardiac surgery and of the nurses providing care for them. The accounts of patients while diverse, also demonstrated a common thread - a 'Typical Journey' for people with diabetes undergoing cardiac surgery.

The Typical Journey begins as when the person with diabetes is admitted for cardiac surgery: Their diabetes is acknowledged, but given little attention since interest is focussed on their cardiac problem and the impending surgery. A period of 48 hours is spent in intensive care post-operatively, and whilst there, patients are given an insulin infusion, which is usually discontinued before they return to the cardiac unit. Patients may spend a period on insulin for their diabetes post operatively, and for some, this may become permanent. Nurses understand and are familiar with this 'typical journey'.

For patients however, there is no pre-operative information regarding potential changes to their diabetes and what to expect during the recovery period. After a period in intensive care, patients return to the ward where unstable blood sugar levels are usual, requiring additional hypoglycaemic medication to usual care. Some patients are discharged with altered medication and blood sugar testing regimens to either their home or rehabilitation facilities.

We found many specific challenges for people with diabetes in the context of cardiac surgery. The most prominent being the need for specific information regarding this 'Typical Journey' for people with diabetes and the changes resulting from their cardiac surgical experience. Patients need to know what will happen, that they will have insulin whilst in intensive care and that perhaps their usual diabetes regimen may be altered forever.

We also found that nurses working in the cardiac unit, had a high level of skill and knowledge regarding the complex cardiac care needed post operatively. However, nurses themselves identified a lack of confidence and knowledge in the care and support of Type 2 diabetes. This was despite their familiarity with the 'typical journey' and their acknowledgement that more than 50% of patients in their unit have diabetes. No nurses reported taking action to address their limited knowledge in diabetes care. Patients therefore found themselves facing changes they did not understand with consequent anxiety about managing their diabetes and found little help from the nurses involved in care.

Control of care was an issue for patients who found themselves in situations where the care of their diabetes was a low priority compared to their cardiac condition and they relinquished control in the immediate post-operative period. At home, people with diabetes are in control of their illness - they are the 'expert'. However, for all patient participants, these usual patterns and attitudes changed at some stage they handed over responsibility, and relinquished control. Paterson, Thorne, and Dewis¹⁹ described being balanced as "walking the fine line between the demands of diabetes management and the need to live a healthy 'normal' life" (p 58). Balance is also intrinsically linked to control. When individuals are admitted to hospital, their previous balance is shifted and control of diabetes management is both subconsciously and voluntarily handed over. Research repeatedly highlights balance, as the single most important coping mechanism for people with chronic illness^{19,20}.

Education for patient participants was insufficient. This was not surprising given the poor diabetes knowledge of the nurses caring for these patients. Patient education is not only essential to promote health and prevent complications, but is necessary to empower individuals living with chronic illnesses^{21,22}. The low levels of nurse confidence in diabetes care might have contributed to patients failing to see the contribution of nurses to their recovery.

Finally, we identified that cardiac nursing staff relinquished responsibility to the diabetes educator for most aspects of diabetes management. The role of specialists (diabetes educators/endocrinologists) seems to reinforce problems in the knowledge and skill level of generalists or specialists in fields other than diabetes (nurses/doctors/surgeons). Referrals to specialists for anticipated problems in the recovery from cardiac surgery for people with Type 2 diabetes reinforced a reliance on specialists by nurses in this study. Referral to diabetes educators and endocrinologists both in hospital and within the community is appropriate and often necessary, but should not replace professional responsibility. Deskilling may be a consequence of introducing roles such as diabetes educators.

These findings clearly support previous reports of poor diabetes care in hospitals in both the USA^{8,10} and the UK⁹. Two potential areas for improving diabetes care are identified in this study. First, the need to build the capacity of non diabetes specialist the care of inpatients with diabetes. Limited contemporary knowledge of diabetes care amongst all the nurse participants suggests a need for greater prominence of diabetes education in pre-registration education. Additionally it is essential to provide professional development relating co morbid conditions and diabetes care specifically focussed to the ‘typical journey’ for patients in specific wards with high admission rates of diabetes. Given the high numbers of patients with diabetes throughout hospitals today requires all nurses to have competency in day-to-day diabetes management in addition to whatever specialist knowledge they possess. Second, patients need access to information about their expected ‘Typical Journey’ while an inpatient. Educational resources could provide patients with information that they can review and consider throughout their hospitalisation and preferably should be available prior to admission.

Acknowledgement: this project was partially funded by the Faculty of Health Science, Deakin University.

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