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## Piloting an Integrated, Interprofessional Programme for People Living with Type II Diabetes: Outcomes and Experiences

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# Piloting an Integrated, Interprofessional Programme for People Living with Type II Diabetes: Outcomes and Experiences

## **Cover Page Footnote**

The research team would like to acknowledge the invaluable input of the AIH clinic reception staff, the students and clients who participated in the programme, and the AIH management team who supported the pilot. Thanks also to Gemma, our very capable research assistant.

**Piloting an integrated, interprofessional programme for people living with type II diabetes:  
Outcomes and experiences**

## **Abstract**

This paper reports quantitative and descriptive qualitative findings from a mixed-methods study exploring and evaluating the outcomes and experiences of clients, staff and students piloting an integrated interprofessional programme for community members with type II diabetes. The one-day per week, eight-week programme included interprofessional appointments, group education sessions and case conferences led by students from exercise and nutrition, health promotion, nursing, occupational therapy, oral health, physiotherapy, podiatry and counselling psychology. Participants shared their experiences in individual interviews or focus groups. Client outcomes were evaluated using basic clinical indicators and the Canadian Occupational Performance Measure (COPM) that assesses client goal satisfaction and performance. While only small expected changes to clinical indicators were noted, there were moderate increases in mean COPM scores for performance and satisfaction. Descriptive qualitative analysis identified enjoyment from working as a team, better client outcomes and new knowledge or learning as the most frequent experiences. Findings suggested increased self-management empowerment for clients and their support people, while students and staff experienced both learning from, appreciating and educating each other about their own and others' roles, and better collaboration. The success of the pilot programme has led to its continuation; however, timing and resourcing challenges noted by participants could threaten sustainability and accommodation of more clients and students.

## **Key words**

interprofessional, students, integrated, type II diabetes, community

## 1. Introduction

This paper reports on a study of clients, students and staff participating in an interprofessional education (IPE) pilot programme for clients in the community with type II diabetes. The one-day-per-week programme was held in a community-based university clinic and included student-led interprofessional appointments and group education sessions focused on clients' self-identified goals. The paper begins with a review of the relevant literature on type II diabetes, integrated care and IPE underpinning the aims of the study. This is followed by the study methods and setting, including details of the programme. Quantitative and descriptive qualitative findings are presented and discussed along with issues raised and their implications for the sustainability of such IPE programmes.

### A. *Diabetes in Australasia*

Type II diabetes is a chronic acquired systemic metabolic disease that significantly impacts on the wellbeing and quality of life of those who live with it (Australian Institute of Health and Welfare [AIHW], 2015; Ministry of Health, [MOH], 2015). In New Zealand, 6% of the adult population have type II diabetes and an additional 25% of the population are pre-diabetic; these rates are up to three times higher in Indian, Pacific and Maori populations (Coppell, 2013; MOH, 2015). Similarly, the AIHW (2015) reports a 6% incidence of type II diabetes in the general Australian population and a rate three times higher in indigenous populations. In both countries, type II diabetes prevalence, morbidity and mortality are rising and disproportionately worse in certain ethnic groups (AIHW, 2015; MOH, 2015). There is a strong association with lifestyle factors such as obesity, smoking and reduced physical activity (Alharbi et al., 2015; Krebs et al., 2013). In the growing over 65-year-old population, type II diabetes has important lifestyle implications. In 2008, Bossoni and colleagues reported a significant reduction in Independent Activities of Daily Living (IADL) scores in over 65-year-olds with type II diabetes and elevated serum glycosylated haemoglobin (HbA1c), but also in control subjects with impaired fasting plasma glucose. This association has since been supported by the systematic review and meta-analysis of Wong et al. (2013) that clearly demonstrates a 50-80% greater risk of mobility, IADL and ADL impairment in older adults with diabetes.

### B. *Diabetes self-management*

Like many chronic diseases, type II diabetes affects physical, mental, social and spiritual wellbeing, and is therefore best addressed with an integrated collaborative, person-centred approach to health care. This approach is outlined in The World Health Organisation (WHO) Framework on Integrated, People-centred Health Services (WHO, 2016) adopted in May 2016. Central to this framework is the empowering of individuals and families with complex problems as active participants in their care (WHO, 2016). Self-management activities such as taking medication, maintaining a healthy diet, engaging in regular exercise and self-checks are significant aspects of type II diabetes patient care, and key to improving outcomes and reducing pressure on health systems (MOH, 2015; Shrivastava, Shrivastava, & Ramasamy, 2013). Behaviour change in people with chronic health conditions is influenced by intrinsic factors such as self-appraisal of risk, attitudes, beliefs, outcome expectation and self-efficacy (Schwarzer, 2008), and by extrinsic factors such as programme complexity, access to health care and geographical and social environment (McNeill, Kreuter, & Subramanian, 2006). Changing behaviour begins with setting an achievable goal, e.g. changing diet to improve blood-sugar levels, but for people with chronic conditions, effecting significant change requires a pre-determined how, when and where action and coping plan for implementing and maintaining new behaviour (Gollwitzer & Sheeran, 2006; Schwarzer, 2008). Thus, health care services seeking to facilitate behaviour change and support self-management of type II diabetes

should attend to intrinsic and extrinsic factors and encourage goal-directed planned behavioural change.

Group-based interventions focusing on relevant productive and leisure occupations appear to increase participation in self-management activity amongst those with chronic disease (O'Toole, Connolly, & Smith, 2013). Research into self-management group-based education for type II diabetes has established that it may improve: HbA1c levels, diabetes knowledge and self-care, glycaemic control, fasting blood glucose, blood pressure and triglyceride levels (Krebs et al., 2013; Rygg, Rise, Grønning, & Steinsbekk, 2012; Steinsbekk, Rygg, Lisulo, Rise, & Fretheim, 2012). Ghahari, Packer, Boldy, Melling and Parsons (2015) demonstrated greater improvements in clients' self-reported attitudes and self-efficacy after a generic chronic disease programme compared with a diabetes-specific one; however, the generic programme had a stronger self-management focus. Overall, it appears that group-based education for type II diabetes should enhance self-managed, goal-directed behaviour change and foster peer support as part of an integrated, person-centred approach.

### *C. Integrated person-centred diabetes care*

Problems with service delivery, access, infrastructure support, health professional skill and knowledge, capacity-building and a lack of Maori health professionals all impact negatively on integrated care for type II diabetes in New Zealand (MOH, 2015). Australian studies suggest greater undetected elevated fasting blood glucose levels in rural populations (Ngan et al., 2015) and disparities in economic and social capital creating barriers to type II diabetes self-management in urban areas (Henderson, Wilson, Roberts, Munt, & Crotty, 2014). To effectively address these and other identified chronic condition needs, teams providing coordinated continuous high quality integrated health and social care are needed (WHO, 2016). A systematic review and meta-analysis by Tricco et al. (2012) suggests effective quality improvement strategies for type II diabetes (those that reduce HbA1c) include team changes to shared care, multi-professional approaches or expanded professional roles. Effective interprofessional teams are also associated with better communication and understanding of roles, and fewer clinical incidents (Reeves, Tassone, Parker, Wagner, & Simmons, 2012).

Interprofessional practice (IPP) can be developed through robust interprofessional education (IPE) where students actively participate in authentic contexts (Charles, Bainbridge, & Gilbert, 2010; Thistlethwaite et al., 2014). IPE has been shown to improve students' self- and observer-rated IPP capabilities, particularly communication skills, and is rated highly by patients (Brewer & Stewart-Wynne, 2013). There is also evidence that IPE in more everyday community-based settings may produce improved health outcomes and access, although resourcing and practice-education alignment issues continue to hamper such initiatives (Institute of Medicine, 2015). The IPE programme evaluated in this paper was designed on the basis of this evidence and the research into type II diabetes needs and integrated care in Australasia.

The aims of the study were to explore and evaluate: client outcomes using basic clinical indicators, goal performance and satisfaction; client perceptions of the programme and its impact on living with type II diabetes; student perceptions of the programme, its impact on their learning and on clients; educator and administrator perceptions of the programme's implementation and impact on clients, students and themselves.

## **2. Methods**

The study took a mixed quantitative and qualitative approach. This section describes the rationale for this approach, the study design, participants, outcome measures, study setting, data

collection and data analysis. Ethical approval for the study was obtained from the Auckland University of Technology (AUT) Ethics Committee (AUTEK # 15/266). All participants gave informed written consent prior to the study commencing.

### A. *Study design*

The Institute of Medicine (2015) suggests that evaluating IPE outcomes and experiences of patients, families and caregivers with mixed-methods approaches may improve alignment between education and practice, and positively affect person-centred outcomes. Our study employed exploratory mixed methodology which “legitimizes multiple ways of seeing and hearing, multiple ways of making sense of the social world” (Greene, 2015, p. 750). The collection of some quantitative data acknowledges that the post-positivist emphasis on repeatable numerical and statistical patterns is how health intervention effects on outcomes are predominantly measured (Carter, Lubinsky, & Domholdt, 2005; Krauss, 2005); however, phenomenological research into the detail and variability of healthcare clients’ students’ and practitioners’ lived experiences is equally important (Bryman, 2012). The complementary nature of qualitative and quantitative data collection and analysis in mixed-methods constitutes a form of triangulation of outcomes, thus potentially improving rigour (Creswell & Plano Clark, 2011; Feilzer, 2010).

This study used basic quantitative analysis along with descriptive and interpretative qualitative analysis (Denzin & Lincoln, 2011). Descriptive qualitative analysis seeks to give voice to participants’ experiences by identifying and organising key ideas or words in the data to show patterns, whereas interpretation goes beyond this, seeking the meaning or significance of key issues and themes of lived experience through more abstract and conceptual inductive analysis (Braun & Clarke, 2006; Braun & Clarke, 2013). Since considerable variation in the description of experience was expected among clients, students and staff on the programme, descriptive categorisation allowed organisation and demonstration of similarities and differences within and between the three different groups (Denzin & Lincoln, 2011). Detailed interpretative analysis was also completed, but will be reported separately.

### B. *Participants*

All clients living in the community with physician confirmed type II diabetes who had previously attended an AUT Akoranga Integrated Health clinic were invited to participate in the pilot programme and study. Current major psychological illness was the only exclusion criterion. All students volunteering for the IPE programme as part of a final-year clinic placement, and all staff involved in programme planning and delivery, were eligible to participate in the study.

### C. *Outcome measures*

Quantitative client outcomes measured during the first and final client appointments were: *COPM scores*: The Canadian Occupational Performance Measure (COPM) is a client-centred measure of self-perceived performance and satisfaction with meaningful physically, culturally and age-appropriate occupations including self-care, productivity and leisure activities (Dedding, Cardol, Eyssen, Dekker, & Beelen, 2004). Clients list one to five challenging occupations and rate their perceived performance and satisfaction with their ability to complete each activity on a scale of 0 (low) to 10 (high). The COPM has validity as a measure of functional performance and satisfaction (Dedding et al., 2004), with moderate inter-rater agreement and reproducibility for both subscales (Eyssen, Beelen, Dedding, Cardol, & Dekker, 2005). The utility of the COPM as an assessment measure for 95 older adults living in the community was demonstrated by Larsen and Carlsson (2012), and a recent study of 475 older adults with type II diabetes confirmed its usefulness for

identifying self-perceived problems with mobility, self-care and domestic activities (Marinho et al., 2016).

*Clinical indicators:* weight, height, body mass index (BMI), waist circumference (WC), heart rate, blood pressure (BP) and blood glucose (BG). These were chosen as easily measured, established indicators of type II diabetes control and programme effectiveness (Krebs et al., 2013; MOH, 2015; Rygg et al., 2012; Steinsbekk et al., 2012). As blood glucose fluctuates, it was measured weekly at the same time for most clients to improve reliability. BP was also recorded weekly for some clients.

Qualitative descriptive outcomes were categories and codes of experience drawn from transcripts of individual client interviews and student and staff focus groups.

#### *D. Study setting*

Akoranga Integrated Health (AIH), a student-led clinic situated on a university campus, offers a range of affordable health services to students, staff and the local community. The clinic is underpinned by an interprofessional philosophy of integrated, client/patient-centred care and service delivery (O'Brien, Swann, & Heap, 2015), but IPE opportunities have been limited by different disciplinary timetables and clinical course requirements. An eight-week IPE programme for people living with type II diabetes was developed collaboratively over several months by an interprofessional team of staff, and piloted in September-October 2015.

#### *E. The IPE programme*

The pilot programme ran one day a week for eight weeks. The first two weeks of student orientation included getting to know each other and the clinic, sessions on IPP, diabetes, shared assessment and note-writing, and practice completing the COPM and clinical indicators. Prior to joining the programme, clients completed a diabetes screening tool developed collaboratively by the staff and students. The tool included 20 yes/no/not sure questions about signs, symptoms and self-care issues associated with type II diabetes, such as dry mouth, anxiety and understanding of how medications work. Clients joined the programme in the third week. Each client was assigned a student care coordinator who welcomed and oversaw progress for that client, attending appointments with him/her when not working with other clients. During the initial appointment, the care coordinator and a student from another profession worked with the client to discuss his/her answers to the screening questions, complete the COPM and measure the clinical indicators. After clients left, a collaborative student-led case conference was held where each client was presented and discussed and a plan formulated. At subsequent appointments in weeks four to seven, clients worked with interprofessional groups of two or three students to address their goals. Interventions and progress were reassessed at weekly afternoon case conferences where students collaboratively planned the following week's appointments. At the final appointment in week eight, initial assessments were repeated. Students then conducted a final case conference and wrote reports for the clients' primary care practitioners.

During the programme, clients attended either an early or late morning 90-minute appointment at the same time each week. Between appointments, a one-hour interactive self-management education group was run by the students for all clients and their support people. Sessions covered foot care, oral care, diabetes and medication knowledge, stress management, diet and exercise.

#### *F. Data collection*

Client demographic details, initial and final clinical indicator measurements and COPM scores



as measured by students in the first and final appointments, were collected from clinical notes two weeks after the pilot programme ended.

The research team included three staff from the programme. Two further researchers and a research assistant who were not involved in the programme conducted 20 – 30-minute face-to-face interviews with clients (11) and 1 – 1½ hour focus groups with students (2 groups of 7) and staff (1 group of 8). The semi-structured questions asked in interviews and focus groups were:

What was your experience of participating in the AIH diabetes project?

1. Things you enjoyed about the project
2. Things that were challenging for you
3. Working with health professionals from different disciplines (clients, students)/ How the students worked with health professionals from different disciplines (staff)
4. Meeting (the client's) initial goals
5. How you perceive the project may impact on your life (clients)/ your future professional life (students)/ students' future professional lives? (staff)
6. At this point in time how do you now view this model of care? (staff)

All interviews and focus groups were recorded digitally, transcribed by an independent transcriber and checked for accuracy by the research team. All identifying features of all data were removed and names replaced with pseudonyms prior to data analysis.

#### *G. Data analysis*

Pre- and post-programme clinical indicators and COPM scores were tabulated and means calculated where appropriate to show patterns in the data. Statistical analysis was precluded by the small size of the sample.

Descriptive qualitative analysis of the data began with repeated independent reading of the transcripts by research team members. Two researchers independently conducted data-derived complete coding of the transcripts; this involves using the participants' own words or phrases as much as possible to create "codes" or descriptions of the text (Braun & Clarke, 2013). The codes were then collected under categories derived from the six interview and focus group questions (Braun & Clarke, 2013). Codes for repeated words or ideas within each category were identified, stored and organised in NVivo10® before being reviewed and refined collaboratively by the full research team, to ensure that all relevant transcript material was represented by at least one code (Braun & Clarke, 2006; 2013).

### **3. Findings**

#### *A. Participant characteristics*

Clients: 8 males and 4 females, aged 56 – 84 years, of European (9), Indian (2), and Pacific Island (1) ethnicity. Diabetes control included oral medication alone (9), oral medication plus insulin (1), insulin only (1) and diet only (1). All clients completed the programme and study, except one client who could not attend the interview.

Students: 5 males and 9 females, studying sport, exercise and nutrition (1), health promotion (2), nursing (2), occupational therapy (2), oral health (2), physiotherapy (2), podiatry (2) and counselling psychology (1). All students completed the programme and study.

Staff: 9 females including clinical educators from nursing (1), occupational therapy (1), psychology (1), podiatry (1), oral health (1), interprofessional educators (2), and clinic administrators (2). All staff participated in the programme and study except one clinical educator who could not attend the focus group.

**B. Quantitative findings**

Clinical indicators: Table 1 displays client demographics and the clinical indicators pre- and post-programme. The small sample was further affected by some missing post-programme data for two clients. Pre-programme BMI, WC and BG were elevated or associated with increased risk for most clients (see Table 1 subscript). At completion of the programme, clinically insignificant reductions in mean BMI, BG and mean WC were noted, reflecting mainly small changes (BMI 0 – 2, WC 0 – 1 cm, BG 1.1 – 2.2 mmol/L). Larger reductions in WC were noted for three clients (Patricia 3cm, Rosemary 6.5cm, Peter 4cm) and in BG for three clients (Ronald 4.9mmol/L, William 7.3mmol/L, Noel 10mmol/L). The larger reduction in BG of one client (Noel), was accompanied by a larger increase in WC (5cm), despite no change to BMI.

**Table 1**  
*Client Clinical Indicators Pre- and Post-Programme*

Client	Age (yrs)	Gender M/F	Pre-programme				Post-programme			
			BMI (kg/m <sup>2</sup> )	WC (cm)	BP	BG	BMI	WC (cm)	BP	BG
April	73	F	33	112	144/64	16.5	*	*	*	*
Patricia	74	F	38.5	116	162/65	6.2	39	113	156/51	8.4
Rosemary	56	F	42	131	150/66	9.7	42	124.5	141/75	10.6
Ronald	82	M	31	102	133/77	11.2	31	102	162/82	6.3
Allan	66	M	31.5	112	131/82	7	33.5	113	128/82	8.1
Peter	67	M	43.7	177	164/82	11.3	43.7	173	140/90	10.5
Kathleen	69	F	39.5	119	159/90	7.1	*	*	*	7.7
Kevin	81	M	22.9	95	140/72	16.1	22.9	94	118/70	18.2
Barry	81	M	35	123	170/80	10.8	33	121	140/86	12
Terry	56	M	35	124.5	155/68	10.7	35	123.5	135/71	10.4
William	84	M	32.6	104.5	151/81	14.8	32.6	105.5	121/72	7.5
Noel	65	M	23	83.4	152/75	20.7	23	88.5	170/80	10.7
Mean	71		34	116.6		11.8	33.5	115.8		10.0

Notes: \* = missing data at completion of the programme.

BMI = Body Mass Index (normal range 18.5 -24.9), WC = Waist Circumference (increased risk >80cm female, >94cm male), BP = Blood Pressure (normal range <140/90mmHg), BG = Blood Glucose (normal range 4 – 7.5 mmol/L)

COPM scores: The COPM identifies everyday activities (occupations) that clients find difficult to complete. The top one to five (mean three) Occupational Performance Problems identified by the client participants often reflected their type II diabetes concerns. These were: oral health/dry mouth (6), back or limb pain (5), poor balance/dizziness (4), foot problems (4), managing diet/weight loss (3), exercise (2), medication/blood glucose (2), mental health (2), cellulitis, cramp, loss of dexterity, diabetes diagnosis, falls, sensation loss, smoking cessation and socialisation (1 each). Pre- and post-programme COPM scores are shown in Table 2. The mean COPM performance score increased from 4.5 to 7/10 and the satisfaction score from 4 to 7.3/10. One client did not complete the post-programme evaluation and another chose not to rate performance.

**Table 2**  
*Client COPM Scores Pre- and Post-Programme*

Client	COPM score for performance		COPM score for satisfaction	
	Pre-programme	Post-programme	Pre-programme	Post-programme
April	6	8	5	7.5
Patricia	7	9	7.5	9
Rosemary	5	6	3	7
Ronald	4	7	5	7
Allan	1	6	2	5
Peter	3.5	*	5.5	*
Kathleen	1	9	2	9
Kevin	5	5	5	9
Barry	7.5	6.5	3	7
Terry	5	6	3	7
William	*	*	3	5
Noel	5	7	3.5	7.5
<b>Mean Score</b>	4.5	7	4	7.3

Note: COPM = Canadian Occupational Therapy Performance Measure, \* = missing data.

### C. Descriptive qualitative findings

Categories and codes: Table 3 shows the final categories (based on the questions and responses across groups), the most frequently occurring codes (confirmed collaboratively) and how many participants from each group contributed to each code. As only one participant referred specifically to the model of care, there is no separate category for that question.

**Table 3**  
*Categories, Codes and Frequency of Codes by Participant Group*

Category	Code	Frequency of Code			
		Clients (12)	Students (14)	Staff (8)	Total (34)
<b>Enjoyable or positive aspects</b>	Working together as a team	5	4	7	16
	New learning or knowledge for self	6	4	2	12
	The students	10		2	12
	Increased student confidence & professional growth		6	5	11
	Overall experience	7		3	10
	Being with others with T2 diabetes	7		2	9
	Whole client focus		6	2	8
	Student care coordinator role	5	3		8
	Supportive, safe IP environment		7	1	8
	Education sessions	7			7
	Unique experience		6		6
	Working with young people	5			5
	Time to discuss, explain	5			5
	Being valued and empowered		5		5
	Focus on client's needs and outcomes		5		5
Partner education and learning	3		1	4	
All in one place, less fragmented	4			4	
<b>Challenges</b>	Time and processes	3	14	5	22

	Cost	1	4	5	10
	Resources e.g. rooms, equipment		6	2	8
	Curriculum/timetabling issues		2	5	7
	Living with a complex chronic condition	6			6
<b>Working with different health disciplines</b>	Better outcomes for clients	3	8	7	18
	Learning about/appreciating other's roles/knowledge		12	3	15
	Opportunities to educate others	5	4	5	14
	Learning to collaborate as a team		8	4	12
	Beneficial for students		4	6	10
	Professional advice or help	10			10
<b>Meeting client's goals</b>	Goals or expectations met	5	3	1	9
	Some goals or expectations not met	5	2		7
<b>Impact on client's future</b>	Changes to attitudes, habits or behaviour	8	2		10
	Improved knowledge or understanding	4	2		6
<b>Impact on student's future practice</b>	Better understanding/confidence with IP		6	1	7
	Know how to integrate/promote own profession in team		3	2	5
<b>Suggested improvement</b>	Repeat or continue or follow-up	8	3	6	17
	Change timing or processes	3	11	3	17
	Involve partners, support people	4			4
	Modify patient group	2	2		4
	Modify teaching and learning	1		4	4

Illustrative quotes: The following quotes illustrate one or two codes for each category, demonstrating how the descriptive codes are directly linked to the data (Braun & Clarke, 2013).

*Category: Enjoyable or positive aspects*

Code: Working together as a team

...you've got everybody here as a team. They have a meeting together, they have a discussion together, they're all working towards making things better for me. So that's what I liked. (Rosemary, client)

Code: New knowledge or learning for self

Initially, I'll be honest I had no idea what some fields did, for example podiatry or occupational therapy. I had a basic knowledge of what they do but not as in-depth as what I have now so for me it was a big learning opportunity. (Melissa, student)

*Category: Challenges*

Code: Time and processes

...even though we did have some lead in time there's always things that are missed... so we were often on the back foot... It is reality when we're working out in practice and we do have to learn as we go and adapt and be flexible. (Kirsten, educator)

Code: Living with a complex chronic condition

...and being a bit more responsible with my diabetes. I think it's fairly common with diabetes, especially if you get it later in life, is to be in denial. And that, that's been made a bit stronger for me, the denial factor. (Allan, client)

*Category: Working with different health disciplines*

Code: Better outcomes for clients

A lot of these things must have just fallen through the cracks or he just learned how to live with it... the fact that there were just people that paid attention to it and have sort of brought it up to the surface I think is great. (Samantha, student)

Code: Learning about/appreciating other's roles/knowledge

It wasn't just interesting watching the students and how they worked together but also us, learning about each other's roles as well and finding out about what we do as educators and how we facilitate things... being able to adapt to other disciplines was very eye opening for me. (Joanne, educator)

*Category: Meeting client's goals*

Code: Some goals or expectations not met

But I still don't know enough about the diabetes as I said before you know, I'm sort of bury head in the sand person. They pricked my finger a few times which I've never really had done before. (Peter, client)

*Category: Impact on client's future*

Code: Changes to attitudes, habits or behaviour

I think we have made really good progress and just seeing [client's] complete change in mood and confidence has definitely been something that I will take away from this. (Alex, student)

Code: Improved knowledge or understanding

...if you get one point out of each of these people about what they think about this well then you're starting to, you can accumulate enough information out of that to say well hang on a minute, everybody's pointing to this, this or this, this must be what it is and this is what we want to work on (Barry, client)

*Category: Impact on student's future practice*

Code: Better understanding/confidence with IP

Knowing what other professions do and other perspectives, to be able to pick up on what the client is saying and maybe having a few different perspectives in your head and picking up on things that you wouldn't usually if I was just thinking about OT. (Laura, student)

Code: Know how to integrate/promote own profession in team

It was a particular benefit to me to really learn what they do... I did learn to sort of integrate my own practice with other practices, I guess I just never even worked with them ever before. (Scott, student)

*Category: Suggested improvements*

Code: Repeat or continue or follow-up

We've had clients who have been really socially isolated and we've seen great improvements... meeting with us, and now they go back to not having that social inclusion, or we've had patients who have lost quite a bit of weight, made substantial changes, but now we just leave them. And I don't know what the answer to that is but I definitely think it is something we need to think about going forward about how we care for our patients. (Amanda, student)

#### **4. Discussion**

The findings of this evaluative study indicate the potential benefits of participating in an integrated health programme for clients with type II diabetes, students and educators. While little change in clinical indicators was to be expected from a six-week pilot programme for a small number of clients,

nonetheless some reductions were noted, consistent with other research findings (Krebs et al., 2013; Rygg et al., 2012; Steinsbekk et al., 2012). Of interest, reductions in waist circumference and in blood glucose were recorded in different clients. This may indicate different goals or personal responses to the education and interventions received, which may be a potential strength of a goal-directed interprofessional approach.

Although limited by small numbers and some missing data, the increases in the mean COPM scores suggest that most clients experienced improved self-perceived performance and satisfaction with IADLs important to them. In addition, eight of the twelve clients reported changes to their behaviours or attitudes towards these activities. These findings concur with previous research showing increased participation in self-management activities by those in group-based programmes focusing on relevant occupations (O'Toole et al., 2013). Interestingly, our findings suggest that this occurred despite five clients identifying goals or expectations that were not met (see Table 3, Category: Meeting client's goals). It is possible that intrinsic motivation was increased sufficiently by the empowerment experienced by clients as active participants in their own and others care and in the education of students, to enable increased self-efficacy without an extrinsic reward (Schwarzer, 2008; WHO, 2016). Changes in perceived ability, attitudes and coping have been correlated with changes in behaviour, particularly if these changes are combined with implementation plans, such as action plans (Barg et al., 2012; Schwarzer, 2008). A larger longitudinal study could investigate whether changes in goal attainment and self-efficacy reflected in COPM scores persist and translate to changes in objective measures over time.

The descriptive qualitative analysis revealed that for clients, working as part of a team, gaining new knowledge and being with others with type II diabetes were key elements in their enjoyment of the programme. This is important for intrinsic motivation (Gollwitzer & Sheeran, 2006; Schwarzer, 2008) and, along with client participants' identification of the benefit of access to integrated professional advice and help, is consistent with research into effective strategies for self-management of type II diabetes (Tricco et al., 2012). Our study adds insight into other elements that almost all the clients identified as positive for them; working with students and having opportunities within a client-centred teamwork setting to educate each other, students and staff about living with type II diabetes.

Many of the IADLs or occupations identified by the client participants were directly linked to managing type II diabetes. Given Ghahari et al.'s (2015) conclusions about the effectiveness of a self-management focus, and our education session and appointment focus on areas such as understanding medication, managing diet, IADLs and exercise, and oral and foot self-checks, longer term quantitative outcome improvements may occur as a result of this intervention (AIHW, 2015; MOH, 2015; Shrivastava et al., 2013). The systematic review by Steinsbekk et al. (2012) suggests that programmes with a similar structure and duration to ours produce sustained benefits over time. By contrast, the New Zealand study by Krebs et al. (2013) reports loss of benefit over time. For this reason, a follow-up study is currently being undertaken to assess any longitudinal effect of our IPE programme.

The descriptive qualitative findings also show that students identified positive effects of working as part of a team, gaining new knowledge and appreciation of each other's roles and improving their perceived ability and confidence in collaborating. Again, this is consistent with previous research into IPE in clinical settings (Brewer & Stewart-Wynne, 2013; Reeves et al., 2012). In our study, the same benefits were also noted by staff. Better staff understanding and collaborative skill may produce the desired improvement in alignment between education and practice (IOM, 2015) as educators and administrators respond together to the needs of students and the community. Staff and students also identified improved outcomes for clients, and a number of students commented on the significance

of a whole-client, goal focused approach in achieving this.

Since clients, students and staff all wished to repeat or extend the programme, consideration of how to sustain an effective, affordable interprofessional model of student-led care is a priority. All three groups identified concerns with time, resources and sustainability of the programme, which was offered free-of-charge to clients. The AIH programme is situated in an urban community with some areas of socio-economic disadvantage and with a significant number of older people with complex health needs. Addressing the known detrimental effects of reduced economic and social capital on self-management of type II diabetes in urban areas requires not only affordable services, but also social support networks for maintaining behaviour change (Henderson et al., 2014). Our programme and others like it need further evidence for improved objective outcomes, and secure sources of ongoing funding so that those with the least resources and highest health needs can be served. This is likely to mean expanding beyond the borders of the university clinic and integrating with current and future governmental strategies for the management of type II diabetes as it continues to affect more Australasian citizens.

Despite the limitations of numbers and duration, the main strength of this study was the gathering of multiple perspectives. These suggest that clients, students and staff worked as a team within a safe “culture of trust and respect” (Brewer & Stewart-Wynne, 2013, p. 486) from which learning, enjoyment and confidence emerged (Table 3).

## 5. Conclusions

This mixed-methods study provides emerging evidence of beneficial, measurable outcomes for clients participating in a student-led programme for people in the community with type II diabetes. Despite small numbers and a relatively short time frame, changes to some clients' clinical indicators and moderate increases in mean COPM scores for performance and satisfaction suggest that an interprofessional self-management goal-focused education and intervention programme may improve objective outcomes in the short term. The study also demonstrated that clients, student and staff enjoyed working as a team and acquired new knowledge or learning for self. The findings suggest that IPE programmes that increase client empowerment for self-management and assist clients, students and staff to learn from, appreciate and educate each other, result in better collaboration and outcomes.

Shared staff and student involvement in implementing the programme was essential for success, along with orientation to each other and to goal-directed client-centred care. Our message to others seeking to initiate such programmes is that multi-perspective planning and staff facilitation and support of student-led, client-centred IPE, create feasibility, enjoyment and buy-in. Issues with timing, costs and resources are potential barriers to sustainability that future integrated programmes for people with type II diabetes will need to overcome. While this study contributes to the evidence that IPE programmes such as ours have benefits for clients with type II diabetes and for students, more longitudinal studies are needed to ensure better programme support, so that those with the greatest need and the least social capital are reached.

## Conflicts of Interest

No conflicts of interest are declared.

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