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An Evaluation of the Community Nutrition Project: A Let's Beat Diabetes initiative

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Introduction

In 2005 Counties Manukau District Health Board (CMDHB) developed the Community Nutrition Project (CNP) to provide obesity management training and support for local Primary Health Organisations (PHOs). The aims of the project were to increase the capacity of PHOs to deliver culturally appropriate and safe overweight and obesity management programmes and to determine if a ‘train the trainer’ model is an effective method of obesity management within Primary Care in Counties Manukau. Implementation strategies included the development and delivery of a training package and the provision of ongoing support and information for the trained workers. An evaluation was required to determine the success and efficacy of the CNP model including capability of the PHO’s to accommodate the programme within current workloads; satisfaction with the course; changes in trainee knowledge and confidence; and increased capacity of PHO’s to implement weight management strategies.

The Community Nutrition Project (CNP) was included as one of the focused evaluations undertaken by the School of Population Health in the first year of the Let’s Beat Diabetes (LBD) initiative. The evaluation focuses on several areas; the CNP course and implementation in the PHO setting, the PHO staff who received the training and the patients enrolled in the programme for weight management.

Description of the CNP programme

The CNP training commenced in August 2005, patient recruitment commenced in January 2006 and six-month follow-up was completed in January 2007. The programme was delivered initially by a CMDHB dietitian and a contracted nutritionist; the dietitian remained involved for the duration of the project. Training topics included nutrition theory, healthy lifestyle and goal setting. The CNP training comprised six sessions;

- an overview of the area of healthy nutrition,
- barriers and enablers of implementing healthy nutrition practices in patients - types of fat and portion sizes
- carbohydrates and ways to change habits
- exercise, label reading and goal setting techniques

- revision work on fast food and snack foods motivation and goal setting
- maintenance, healthy habits, evaluating patients

Some of the trainees received extra training about cultural practices, brief opportunistic interventions, information about vitamins and minerals.

Nurses and community health workers recruited patients from within their regular general practice population. Upon recruitment, measurements of patient parameters such as weight, cholesterol, blood pressure, food intake and exercise levels occurred and they were followed-up on a regular basis by their CNP trained health worker to provide both education and support. The assessments were repeated at six months.

Evaluation methodology

The evaluation methodology was developed collaboratively with the CNP programme providers and used multiple methodologies to address the programme's evaluation objectives including documentary review, in-depth interviews, questionnaires and biological indices. The documentary review included trainee course evaluations, project manager records and the responses from a peer-review of the training manual. The in-depth interviews conducted with providers, trainees and patients explored questions such as satisfaction with programme, and barriers to supporting the programme for the providers; changes in worker practice and perceptions; and changes in patient beliefs about diabetes, lifestyle and motivation. The trainee assessment used two methods, the first was a self-report tool that assessed nutrition and physical activity knowledge at three time points (prior to the training being conducted; immediately post training; and six months following the completion of training). There was also an assessment of the trainees' core competencies, administered by the dietician and nutritionist, just after they completed training¹. Patients' data included, demographic and clinical characteristics of the patient; including Body Mass Index, Blood Pressure and Blood results along with questionnaires about nutritional knowledge; food intake and a record of physical activity.

Description of the trainees

Training was given to twenty health workers from two PHO's in CMDHB. All but one of the workers were female. Nine of the workers were nurses and the remainder were community health workers. The majority of community health workers identified as Maori (9) and others were of Pacific descent. Four of the nurses identified as Maori, one Pacific, two European and three as Asian.

Description of the patients

The patients recruited into the CNP programme had to meet only one criteria ; they had to be overweight. Ninety nine patients from the two PHO's were recruited.

¹ A few trainers were re-assessed six months post training.

Table 1: Patient recruitment outcomes

		Frequency
Patients recruited		99
Six month follow-up ²		54
Did not complete follow-up	Health worker no longer involved	11
	Patient moved away	4
	Withdrawal	3
	Lost to follow-up	27

Analysis

Quantitative descriptive analyses were undertaken using a Statistical Package for the Social Sciences (SPSS; Chicago II) and where appropriate paired sample t-tests were used to determine whether the six month data was significantly different from the baseline data. Information gained via interviews was transcribed, condensed into topic areas and reviewed using inductive analysis to identify underlying themes (Thomas 2003). Results from these multiple sources were triangulated to inform the evaluation.

² Involvement in six month follow-up varied widely from minimal blood results provided to full completion of all assessments and questionnaires

The CNP Course and Implementation

This section presents the results of the evaluation of the CNP course and its implementation in the primary care setting. Information sources used in this evaluation include project documents, interviews and questionnaires. There are four sections; the CNP programme, the nurses and community health workers, the perspectives of the nurses and community health workers followed by a summary of these results.

The course preparation and evaluation

A nutrition training manual was developed and a peer-review was undertaken by eleven health professionals including dietitians and CMDHB co-workers to ensure that the manual adequately met the requirements of the programme and was set at an appropriate level for the trainees. Table 2 shows that the majority of the manual was appropriate for the intended audience. It is of note that cultural appropriateness received a lower score than the other areas.

Table 2: Assessment of CNP Written Manual

CONTENT	MEAN (n = 11)
Accurate, Credible Information	2.4
Appropriate Information	2.3
Appropriate for target cultural group	1.9
Useful Information	2.7
READING AND COMPREHENSION	
Clear Purpose	2.8
Appropriate Word Usage	2.8
Sentence and paragraph structure	2.8
FORMAT, ORGANISATION AND DESIGN	
Locating Information	2.8
Format	2.6
Length	2.3
Errors	2.2

The analysis of course evaluations revealed the trainees rated the programme highly, and liked the presentations especially the hands-on sessions. The teaching aids appeared to be well-received by the trainees and appropriate to the content being

taught. Suggestions included having the handouts included in a folder and greater recognition of cultural practices surrounding food³.

The course was modified following feedback from the first 16 trainees. The second course had fewer sessions of longer duration as this was easier for PHO staff release.

CNP Worker Retention and Supervision

Twenty health workers were trained but three withdrew early in the implementation due to funding and job changes. This loss of trained workers continued throughout the programme. Reasons for the high attrition rate included leaving the job and lack of interest and competing workload commitments. By the end only four were available for interview.

Supervision of the health workers consisted of monthly meetings. In the first six months post training each health worker had an average of 6 supervision visits lasting 45 minutes. They also received fortnightly email updates which included handy tips and useful nutritional information and post course offers of supermarket tour training sessions which were well received by those that attended. The CNP programme manager reported the health workers were often unable to attend planned supervision sessions as other work took priority. The staff who continued with the programme received more visits as a result for approximately the same amount of supervision time each visit. The community health workers required more supervision both in frequency and in the amount of time with a focus on basic assessment techniques⁴. For details refer to the Table 3 and 4.

Table 3: Supervision times overall

	Count All	CHW	Nurse	# Visits	Avg mins supervised
Did not continue	8	4	4	2.8	49.5
Continued	12	7	5	8.5	43.5

³ Comments were made that in some cultures it is preferred to have the food on tables rather than the floor.

⁴ Community health workers did not assess patients as part of the normal work role so were less experienced

Table 4: Supervision times for staff who continued

	Count	# Visits	Avg mins supervised
CHW	5	10.1	47.0
Nurses	7	6.2	38.7

Perspectives of the Programme providers

Discussions to inform the evaluation were held with the programme manager throughout the duration of the project and a formal interview was held using the LBD Action Area schedule which included topic areas such as support and impact of the intervention.

The project manager provided informal support through face to face meetings, telephone calls and emails as often as was required by the health workers.

To make it as simple as possible and to implement the training slowly thus increasing the likelihood that the skills would be learnt effectively

It was intensive at first with contact gradually easing as the trainers became more confident with the skills learnt.

The level of support provided also varied depending on how much input the manager wanted at the practice where the trainers worked.

Initially, and it was probably varied because it was more meeting with the trainee's and it depended how much input the manager wanted. But I was probably keeping the manager's up to date once a month, meeting with the trainee's at various times.

The programme manager reflected on the levels of engagement the PHOs had in the programme.

The practice who recruited the most patients to the programme used a practice nurse who had been through the training to refer patients.

One of them [PHO] has been much more supportive of the project than the other

Factors mentioned as hinders for the PHOs included the high staff turnover and staff shortages.

...the shortages in staff and the high turn around is really making it difficult to get that long term effect because we're losing staff and we've lost half the trainee's, so that just makes it harder long term. And the fact the managers constantly change and doctors are leaving, it really makes it hard to keep that support up and keep it prominent.

Reflections on organisational support revealed that there were initially high levels of support and steering group meetings which have declined over time

Had [support] initially, probably for the first year or so- the Steering Group which met monthly,

I mean in terms of support, there was support, Most of the time apart from the one support person that had an invested interest in the project also, other than that it was basically left to your own devices it was very much figure things out yourself and find the decisions yourself.

I mean it seems to be and I have a lot of linkage with the Action Area leader, and keep her up to date with the progress of CNP

Perspectives of the PHO Providers'

Nurse Managers from the PHOs were interviewed to gain a providers' perspective of the CNP programme. The main areas identified during analysis were; engagement in the programme, outcomes, hinderers and enablers. Further analysis of these themes is now presented.

Engagement in the programme

Analysis of the interviews revealed engagement in the programme incorporated components such as how well the PHO was involved in the planning of the programme and how aware the DHB was of PHO culture. The providers shared their perspectives about the lack of involvement with PHO's in the initial planning of the project.

There was no involvement of the PHO with setting up and implementing the training. This has probably been the biggest problem with the programme.

The programme has not had much contact with management.

This perceived lack of involvement appears to have been complicated by decision sharing mechanisms within PHO's.

The DHBs tend to talk to general managers of the PHOs then think they had buy-in where really they need to talk to all levels. This lack of buy-in and involvement with the programme made it difficult for me to get my own organisations' backing.

A reason put forward for this problem with involvement was the DHB's awareness of PHO culture.

DHBs don't understand how PHOs work – they don't really investigate the internal processes – not much groundwork done.

Outcomes

Outcomes identified by the providers were able to be coded into themes such as transferable learnings, cost effectiveness, compatibility with other programmes and ongoing utilisation. One provider's experience of lack of engagement has a positive outcome in that she had ensured she was very involved in planning for another project.

There have been no previous experiences as this [CNP] has been the first programme of its kind. They are now doing a self-management training and [I have made] sure there was more [PHO] involvement.

There was no clarity with regard to the providers' perspectives on cost effectiveness, the evaluation results are being awaiting to decide.

In regards to the clinic I feel that the programme has been cost-effective.

The programme has been really expensive particularly with the time factor. It is hard to say it was cost-effective until you see the results

Another theme that was identified is the compatibility of CNP with other programmes

CNP is compatible with other programmes that were done including the chronic care management training and some cardiac programmes.

because there was crossover with clients in other areas CNP did not pose too much of a problem for workload

One PHO is continues to report ongoing utilisation the programme processes despite the completion of the CNP programme.

All [of the staff who had been trained] are still applying the training as far as I'm aware.

She is not sure where the programme is going to fit in the future with her PHO. However she recognises that the knowledge gained will always be useful.

Hinderers

Analysis of the interviews revealed a variety of hinderers to the success of the programme, the main hinderers were appropriateness, lack of ownership, expectations, communications, workloads, staff limitations and ongoing knowledge

gaps. It was felt that the implementation of the CNP programme did not specifically address the needs of Maori and was not entirely appropriate for the community.

The workers didn't seem to be that focused on the needs of Maori, I don't think the programme was particularly user-friendly.

As a result of the lack of involvement in the planning of the programme the providers discussed a lack of PHO ownership of the programme that for example slowed recruitment.

*It caused a lack of ownership and felt as if things happened around
Generally the clients were sourced by the GPs and then referred to the workers.
Yet the GPs had no link in to the programme and no training with it.*

The providers' explained how they had not understood how much time would be involved in CNP and what to expect of staff post training.

The programme was not explained well enough ... didn't explain how much time would be involved.

Didn't know what was expected of the staff so couldn't support them post-training.

Didn't know if I was compromising the programme when I asked my staff to do [other] tasks

A lack of reporting to PHOs about the staff and the programme itself was also identified as a hinderer.

However, she needed to know how the staff was getting on.

She is not satisfied and it should have continual feedback and results clear to all throughout.

Both providers spoke about the impact of the programme on practice workloads especially the amount of time involved.

... but it did seem to take up a lot of time. She understands what the programme is about so it really was the time that was her main issue.

The tasks following the training were in addition to the normal workload since the PHO structures weren't in place to support the workers to use the training.

But it was the workload that was required of them that was the crucial factor.

But it already caused one nurse to give it up because of the time factor.

I noticed that the nurse stopped doing what she learnt as her workload was far too high. It seemed like they had trouble getting hold of the clients and chasing them up.

Patients who are grossly overweight need specialised equipment to record their measurements which were not currently available.

... Incorporate the appropriate equipment to implement the programme (e.g. tape measures long enough and scales that take the weight). My staff had to make do which wasn't fair on them and embarrassing for the client.

A further limitation was health worker confidence and motivation to address the difficult issue of obesity this was complicated by a mismatch health workers with the target audience at one PHO.

However, they never really got enthusiastic about this programme – it seemed to be the clients – therefore they struggled with it. It also seemed to be a lack of motivation for the type of work – they loved smoking cessation but weight control was very difficult. The client group were also young working women where the community workers were older pacific ladies so there may have also been cultural issues in establishing rapport with the clients.

On reflection the providers reported knowledge gaps that impacted on the programme, specifically exercise and further training needs.

The nurses seemed to lack knowledge about exercise which she felt was equally important.

However she is still wondering whether the workers need more training.

Enablers

The enablers identified through the interview analysis are support for the staff, funding, and autonomous practice. The support given to health workers by the programme manager was seen as enabling them to continue.

The level of support from [programme manager] made a big difference as to whether they continued with the programme

Being able to get funding to cover CHW expenses has also been an enabler.

The community health workers weren't as bad as were able to get extra hours to implement the training.

Where health workers had the skill, confidence and authority to practice autonomously there was less impact on the providers.

My nurses were more independent so co-ordination of programmes was not a big issue for me

Summary of CNP Course and Implementation

Training was given to twenty health workers from two PHO's in CMDHB. The course was modified to have fewer sessions of longer duration to aid staff release from the PHOs. The nutrition training manual was peer-reviewed and found to be set at an appropriate level for the trainees. The one area of concern was cultural appropriateness of the manual. The trainees rated the programme highly, especially the hands-on sessions and teaching aids. They suggested a need for more recognition of cultural practices surrounding food. There was a steady loss of CNP trained workers that continued throughout the programme. Reasons for the high attrition rate included staff leaving the job, interest and competing workload commitments. In the first six months post training each health worker had an average of 6 supervision visits lasting 45 minutes but they were often unable to attend planned supervision sessions as other work took priority. The community health workers required more supervision than the nurses both in frequency and time with a focus on basic assessment techniques.

The project manager provided informal support through individual supervision to the health workers though this varied depending on how much input the practice manager wanted. There was varying levels of engagement by practices in CNP. Factors that hindered the implementation of CNP included high staff turnover and staff shortages. Within CMDHB there were initially high levels of organisational support and steering group guidance which declined over time.

The Nurse Managers reflected that the way the PHO was involved in the planning of the programme resulted in a lack of engagement which appears to have been increased by decision sharing mechanisms within PHO's and by a lack of awareness by the DHB of PHO culture. Provider outcomes included increased involvement in planning for another project. CNP was found to be compatible with other programmes such as CCM. One PHO continues to use the programme. There was no clarity with regard to the providers' perspectives on cost effectiveness. A variety of hinderers to the success of the programme were identified. It was felt that the implementation of the CNP programme did not specifically address the needs of Maori and was not entirely appropriate for the community. The lack of involvement in the planning CNP resulted in a lack of PHO ownership of the programme. The providers had not understood how

much time would be involved in CNP, what to expect of staff post training and would have preferred more reporting about how staff were doing and the programme itself. CNP had impacted on practice workloads especially the amount of staff time involved. An issue that arose as a result of CNP was that patients who are grossly overweight need specialised equipment to record their measurements which were not currently available. It was found that addressing a problem as difficult to manage as obesity challenged health worker confidence and motivation especially if they were mismatched with their target audience. Enablers identified by providers included the support given to health workers by the programme manager as was being able to get funding to cover CHW expenses. Where health workers had the skill, confidence and authority to practice autonomously there was less negative impact.

The CNP Trained Health Worker Results and Perspectives

This section presents the results of the evaluation of the CNP trained health workers (Nurses and Community Health Workers) data. Information sources used in this evaluation include project documents, interviews and questionnaires. There are four sections; health worker knowledge, core competencies, the perspectives of the nurses and community health workers followed by a summary of these results.

Nutritional knowledge

The health workers knowledge was tested at three time points; pre-training, post-training and 6-month post training. Specific areas tested included knowledge surrounding appropriate weights, suggested levels of physical activity and diet. Analysis was limited by only seven completing all assessments, eight completed only the pre and post assessments the five remaining completed only a few assessments⁵.

The following graph, Figure 1, presents the knowledge scores for the seven who completed all 3 assessments. All increased their knowledge as a result of training and all retained the knowledge over the six months.

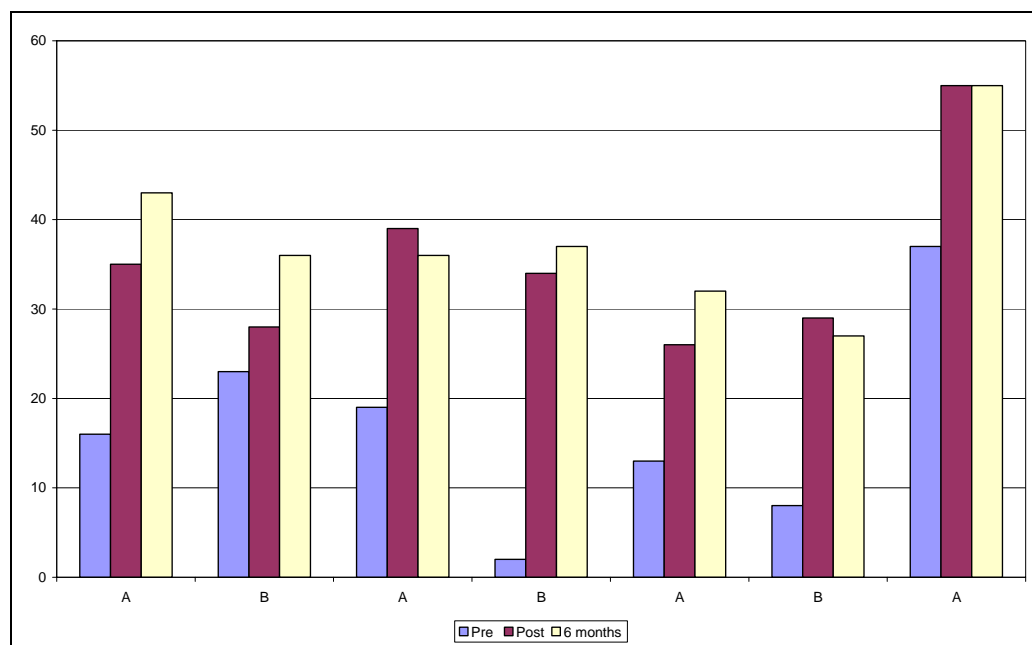


Figure 1: Trainee knowledge scores for individuals who completed all assessments.

⁵ Staff turn over most likely reason given for low completion rates of pre, post and follow-up assessments

Analysis of knowledge questionnaires reveals training increased knowledge. There was a gap between the knowledge levels of community health workers and nurses see the following graph (Figure 2).

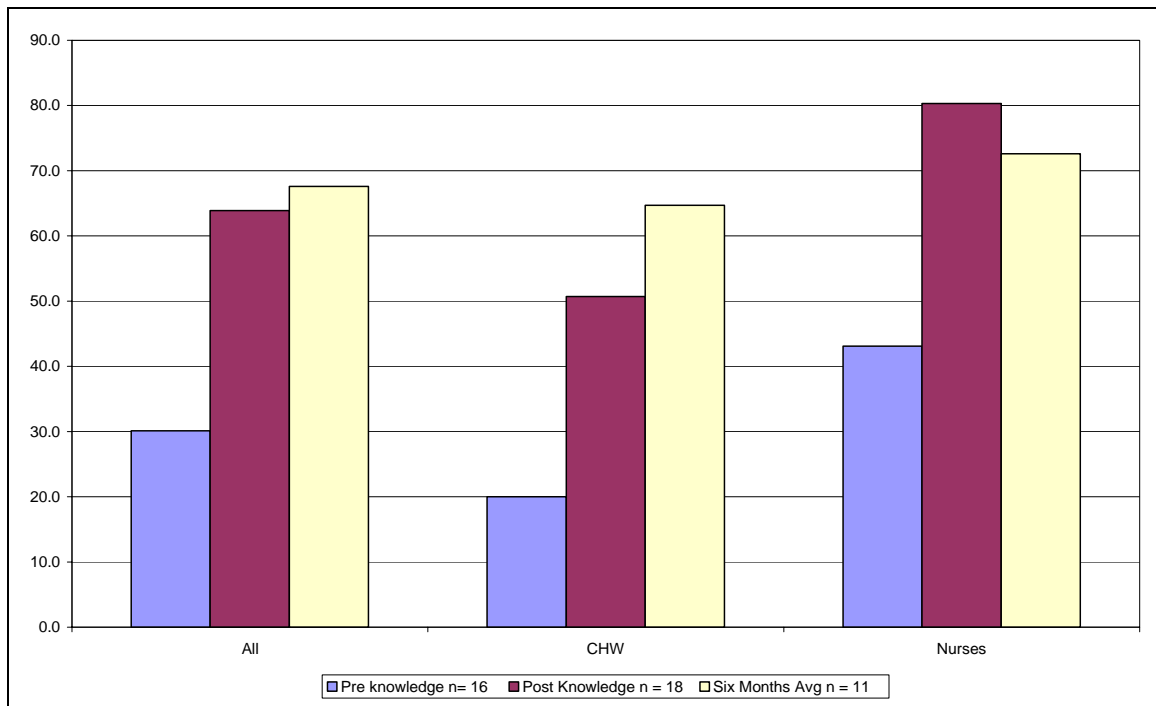


Figure 2: Average % knowledge scores for All trainees, CHM and Nurses over time

Core Competency

To ensure safe and effective practice, trainees were assessed on their level of competency by the programme manager with regard to both their ability to provide nutritional guidance to patients and their ability to assess patients in areas relevant to weight management. This assessment occurred immediately following training, a further four trainees were re-assessed at 6 months. Assessments of the immediate post-training data indicate that the majority of trainees met approximately 50% of the core competencies with two trainees doing very poorly. The ability to identify barriers for their patients and levels of communication were two low scoring areas.

The perspectives of the nurses and community health workers

In-depth interviews were held with four of the nurses and community health workers who had received CNP training. Themes identified included cultural issues; targeting

the family as opposed to the individual; importance of rapport; trainer expectations; organisational support; programme support; trainer impact; and trainer retention.

The trainers shared about the many cultures present in their practice and that this understanding the needs of these different cultures was important. Although they thought culture wasn't a barrier as culturally appropriate skills were already developed, the need for cultural training to be included in the programme was still articulated.

The cultural barrier was the biggest because they are so used to eating a certain type of food...so you have to provide them with a fresh idea without cutting down the old idea.

I had a Chinese lady I couldn't communicate with so we had to drop her off.

To us cultural barriers didn't matter because we speak many dialects. Maybe others it's not their culture, they have no understanding they might find it difficult.

One area of the training that appeared not to match the Maori cultural perspective was the Brief Opportunistic Intervention training added as an extra to the CNP programme for some health workers.

Only...how can I explain it from a Maori perspective, it wasn't so much the training from the dieticians, it was the training from the other lady....[The Brief Opportunistic Training].... that wasn't how we felt how we would have approached it for our kind. So the good thing was the dieticians came up with a simpler way of helping us.

The Brief Opportunistic Training was really helpful. Quite a few struggled with it but I actually found that the most exciting part out of it all.

You had to ask specifically the things you needed to ask the person whereas for Maori it just comes straight out and that's it.

Day to day job and family commitments take priority over health, this coupled with the transitory nature of many clients resulted in follow-up problems.

Just because you have diabetes, it's not a priority for these people. They are seeing to their children and their family needs, that is the priority.

Five of mine were like that too, working mothers, obese working mothers. They leave home at 4am get home at 6pm still have to cook, still have to support their family.

Very transient client base. A lot of them move because the job has changed or the relationship has broken up. Whoever brings the money home, that is where the focus of the family is. That is the most difficult thing, the clientele base with the movement. 50% of our people are transient.

In their usual practice the health workers would not be relating to a patient in isolation but instead work with the family. As a result, many stressed the importance of future training re-focusing on how to apply skills learnt in a group environment as opposed to individuals.

So you need to impress the person who is on the course itself, to support them all the way and then make an attempt to sit with the family and talk to them, hands on and that is very important. To work with families.

I think instead of just having the one person we need to involve the family.

The mindset in the clinical world slowly has to change. It needs to fit around the workers because the workers are often the drivers and the drivers take the car, the client is at home.

The third one was always at the beck and call of her family.

To include the family, culture etc. Family members will not count up they are set in their way.

Building on the rapport present between the practice staff and the patient meant some patient were very at ease with the CNP health workers involvement.

Our patients recognise us; we are not strangers to them. We are not a threat or a barrier.

The CNP recruitment process resulted in some patients being surprised by the approach from the CNP trained worker as they lacked of understanding about what was offered.

By the time it got to us we went to visit we were not welcomed with open arms. They were what are you here for? I have a dietician at my doctor, I have my own GP so what are you doing here for?

No like we said the referral comes in we don't go out looking for them. We just pick it up and break the ice.

During the pilot we felt that nearly every single one we went to they said they didn't need us.

Although there appeared to be some confusion in the beginning, the majority of the health workers now were clear on the role they were to play. All stressed that more understanding in the beginning would have made it much easier to implement.

I think in the beginning we were struggling to understand, well for me, I was just struggling to see just where it all fitted.

Initially I felt a little bit out of depth because the impact of changing the way of doing it I really had to concentrate. Once I bought into it doesn't impact at all.

I don't know personally whether it is their fault or my fault but I went into the programme without knowing exactly what was entailed. Thought it was just some brief information on nutrition, I didn't realise that it was going to be a project. Intense. If I had of known at that level I would have skipped because I taxed myself far too much.

Further support from management to implement what they learnt on the course was needed according to some health workers especially for the day to day running of the project and their new role.

We've always got the dieticians in, we have their numbers. If we are stuck we ring them. We also have our manager here that we can talk to.

The only thing I personally found during the time when we did that trial clients for weight, specifically weight, it wasn't much information given to the client by the doctors.

Our management of us is really good. In fact they encouraged us all the time. They still do.

Support provided by the programme was perceived positively and the support is ongoing.

Material support was there, all the information. A constant update was coming. So it has been fantastic support and information provided.

Discussions indicated that the programme has influenced the trainers themselves as well as that of their community.

Its going out into the community as a lot of my friends are overweight and diabetic so need to be provided with healthy food.

Well my life has never been the same now...it certainly helped me in my role as a nurse because I can do so much when it comes to diabetes with the medication component and the diagnostic stuff, but at the end of the day if they don't have their lifestyle stuff sorted then its kind of you know pointless.

An important factor for continuing to use the CNP information was the development of a belief in worth of the knowledge they had acquired and its applicability both personally and to others.

The other major issue was my son had put on so much weight. It [the course] made me realise what I was doing wrong.

I am now self-motivated.

So I started practicing on myself and that helped me so I could carry on with my patients.

Another factor that impacted on the workers was appropriate time management and having an understanding of how much time and effort would be required in order to participate in the programme:

Time was the major medium for me, I didn't have that time. If I did I would miss out on the study lectures and assignments that were due one after the other.

I think another thing before they get enrolled in the project they understand the implementation and the participation of what they are doing. They must have discipline. If they don't have discipline, they don't have motivation and if they don't have motivation the project won't be successful.

At first I used a lot of extra time to implement the training because I wasn't quite sure. But as time went on and with the project manager's help I found I could actually cut it down.

Summary of Health Worker Results,

The health workers knowledge of weights, suggested levels of physical activity and diet was tested at three time points. Those completed assessments were found to have increased their knowledge and retained it over the six months. The CHW continued to increase their knowledge the longer they remained involved. Their level of competency to provide nutritional guidance to patients and their ability to assess patients in areas relevant to weight management was assessed and the majority of trainees met approximately 50% of the core competencies. In particular their ability to identify barriers for their patients and levels of communication were the main areas of concern.

The community health workers and nurses reported an understanding of culture and whanau commitments were critical for success of the programme and suggested a need for more cultural training to be included in the programme. Patients are not in cared for in isolation from their family and it was suggested there is a need for training to focus on working with group/family as well as individuals. There had initially been lack of understanding about what the health workers role entailed they needed more support management to implement what they learnt on the course. The development of a belief in the worth of the programme and its applicability was linked with perseverance in the programme. A deterrent was a lack of understanding of how much time and effort was involved.

CNP Patient Results

This section presents the results of the evaluation of the patient data and perspectives. Information sources include project documents, interviews and questionnaires. There are five sections; descriptive characteristics; biological measurements; and nutritional knowledge, dietary intake and physical activity; and patient perspectives followed by a summary of these results.

Patient Descriptive Characteristics

Ninety nine patients were recruited in the CNP programme. While there was missing data it appears the majority of patients were female (68) and Maori (55). The patient ages ranged from 20 to 73 years with a mean of 48.6 years. Twenty of the patients reported they were smokers. Eighteen were on the CCM programme and 16 were recipients of Care Plus. Only 8 patients were recorded as been enrolled in both programmes. Of these patients, the most common pre-existing condition was hypertension. See Table 5 which follows for extra detail.

Table 5: Demographics of Patients Enrolled in CNP

		Frequency
Ethnicity	Maori	55
	Pakeha/European	11
	Cook Island Maori	6
	Samoan	7
	Tongan	6
	Fijian	2
	Asian	4
	Niuean	1
	Unspecified	7
Employment status	Full-time employed	36
	Benefit	13
	Retired	11
	Homemaker	7
	Part-time employed	5
	Student	4
	Unspecified	23
Patient Medical Conditions	Hypertension	42
	Raised Cholestrol	35
	Type II Diabetes	35
	Respiratory Problems	14
	Coronary Heart Disease	7
	Arthritis	6
	Stroke	2

Table 6: Medication being taken by patients

Medications	Cholesterol	26
	Oral hypoglycaemics	22
	BP lowering	19
	Insulin	2

The most common medications being taken by this group of patients is aimed at cholesterol management see Table 6 . While 40 of the patients reported they took no medications, cross-tab analyses indicate that 14 of those 40 patients reported having an existing medical condition where one would normally be prescribed medications. For example 10 reported they were hypertensive and five reported they had high cholesterol.

The most frequently reported medical conditions identified in the patients' families was Type II diabetes (see Table 7).

Table 7: Family History of Medical Conditions

Familial Medical History	Type II Diabetes	47
	Hypertension	40
	Coronary Heart Disease	23
	Raised Cholesterol	17
	Stroke	2
	Type I Diabetes	2

Patient Biological Measurements

Following recruitment of the patient, the health worker records their weight, body mass index (BMI), waist circumference, and blood pressure. Blood results were recorded including cholesterol levels and HbA1c where appropriate. The average Body Mass Index (BMI) was 39.7 as expected in this group selected because they were overweight. Twenty-one were overweight and 58 had a BMI of over 32 categorising them as obese for Maori and Pacific. The following table presents the baseline results. It was reported by the providers that measurements of the largest patients were limited by scales and tape measures not having high enough capabilities.

Table 8: Baseline Biological Measurements

	n	Minimum	Maximum	Mean	SD
Weight	73	64	218	106.83	33.3
Height	87	150	185	153.46	42.3
BMI	81	26.3	73.7	39.71	10.5
Waist	81	68	160	93.3	48.7
BP-S	68	98	160	114	41.7
BP-D	68	60	110	71.8	27.1
Glucose	61	3.9	12.4	4.1	2.8
HbA1c	66	4.9	11	4.8	2.9
Cholesterol	75	3.1	6.9	4	1.7
LDL	74	0.8	4	2.1	1.06
HDL	74	0.8	3.6	1.2	0.61
Triglycerides	73	0.4	4.8	1.5	1.04

Analysis of data pertaining to biological measurements at six months was limited due to the very low numbers that had repeat assessments, see following Table 9.

Table 9: Availability of biological data at baseline & six months

	Baseline	Six months
1-7 Biological Data sources	52	46
All 8 Biological Data sources	36	6
Missing all	11	47
Total	99	99

Likely reasons they were not reassessed included shifting away or their health worker was no longer involved in the programme. There were statistical differences to the 0.05 significance level in two variables; weight and BMI see following tables (Table 10 and Table 11) which reveal weight dropped by an average of 2.7kgs and the BMI by an average of 1 between baseline and follow-up for more than 40 patients.

Table 10: T Test Baseline vs Follow-up

	n	Mean	SD	Std Error Mean
Weight Follow-up	47	109.28	29.93	4.36
Weight Baseline	47	106.83	27.21	3.96
BMI Follow-up	43	40.46	10.5	1.6
BMI Baseline	43	39.4	9.99	1.52

Table 11: Paired Samples Test (Weight and BMI)

	t	df	Sig (2 tailed)
Weight - Weight 2	2.221	46	0.031
BMI - BMI 2	2.804	42	0.008

Patient Nutritional Knowledge, Dietary Intake and Physical Activity

Similarly to the health workers, patients were tested on their knowledge of food groups, appropriate weights, recommended exercise levels and recommended consumption of fat and sugar. Seventy two patients completed the baseline assessment and only 14 the six month reassessment

At baseline 48% were unable to correctly answer a question about food groups and 69% did not know the recommended number portions for differing foods. Knowledge about portion sizes varied with $\frac{2}{3}$'s correctly answering fruit portions whereas taro portions were very inaccurate see Table 12 for full details.

Table 12: Percent correct - recommended serving sizes

	Baseline n=73	6months n = 14
Bananas	66.10%	50.00%
Apple	64.30%	92.90%
Meat	39.30%	78.60%
Carrots	37.50%	57.10%
Milk	35.70%	78.60%
Pasta	33.90%	64.30%
Bread	30.90%	57.10%
Cheese	25.00%	35.70%
Taro	16.10%	28.60%

Three quarters of the respondents could correctly identify most fatty foods at baseline and this rose to 100% for those who did the reassessment. Respondents could also identify healthy snacks, with most identifying fruit and vegetables.

The other nutritional assessment focussed on the type and amounts of foods eaten. This questionnaire was attempted by 80 patients at baseline. Some questions elicited few responses. Those patients who reported their fruit intake ate the recommended quantities but few ate enough vegetables. Overall $\frac{2}{3}$'s reported eating wholemeal bread at baseline. Most reported eating unhealthy foods (pizza, fries and cakes) less than once a month.

Another assessment completed by the patients was a record of their physical activities over a one week period. There were very low completion rates for this assessment with rates only 28 out of the 99 recruited patients returning them to their health worker at baseline and only 15 at six months.

The patients were asked to record both planned and incidental activity. The most commonly reported planned activity was walking, others listed included gym /treadmill/ aerobics; line dancing; swimming / aqua aerobics and organised sport. The most common incidental activity was housework others included gardening and shopping.

The duration of most planned activity was 46minutes, and for incidental activity it was 16minutes.

The Patients' Perspectives of CNP

An interview was undertaken with three patients who had participated in the programme to gain an understanding of their experiences of the programme.

The programme was delivered either individually or in groups and the interviewed patients had all experienced been involved in a group. While two found this way important the third found it threatening and felt more in need of one-on-one support.

I think the camaraderie, having the people that you can talk to.... So that's for me, being able to talk to other people. Because we are all at different sages so because of that you know I am here and some are ahead of me or behind me and we can help each other on our journey.

And I meant to say that the support group, sharing with one another, reflecting and all that keeps everybody motivated and its about the challenge, everybody in the group challenging one another.

The support .I found it was easier on my own. I found it really easy to do it on my own but as soon as I went into the group I went backwards.

The patients found their health worker positively assisted them to make the lifestyle changes.

I think the staff make a difference, they are always there and I can ring them up. Sometimes I am forgetful and stuff like that but they are patient. I have access all year around. That is important to me, that I am not a number, that I am a person.

All of the patients reflected on the effort that is required by themselves to make the changes and shared about taking active steps to help make the changes.

The only difficulty is myself. If I decide I don't want to do it today, its my motivation. Its an obstacle I need to go around, over or under, just to keep on keeping on.

I think once you get used to it and make a commitment to it, it becomes a daily routine.

That's just a lame excuse. It's really just myself, I've got no one else to blame but me. Yeah.

All of the patients discussed how they had used the pools for their primary form of physical activity. They needed to come up with types of activity or places to swim when this option became unavailable.

I know what to do but I get to this stage, like winter time. Like that time last year that was my excuse was that it was too cold. Which it was, and that's why I stopped really. But now we are back on board.

I have to say that when it gets too cold, like when the heater broke down in the pool for over a month, it got too cold so I gave it away for a month because of that. So I just did easy exercises at home in the mornings.

Just learning different things. The swimming, I tried the swimming but I stopped that. I would rather do things on my own, not have to go out in the early hours of the morning and go to the pools... I prefer not to do things in public until I get smaller.

Oh the food part that's ok, it's the exercise part that I find hard.

All patients discussed their families and immediate communities both in terms of sources of support and as willing recipients of the knowledge gained from the programme.

Yip my sister is doing it as well and she is going to have her boy start soon. Eating healthy. So are my parents, we are all sort of changing our ways.

It was my grandson. Yip. My grandson told me he didn't want me to die. So that sort of made me, it threw my thinking around. I knew I had to do something about it.

Summary of Patient Results and Perspectives

Ninety nine overweight patients were recruited into the CNP programme, the majority of whom were Maori females. The average baseline BMI was 39.7 on reassessment at six months it was determined average weight loss (2.7kg) and BMI had reduced and that this change was statistically different. Nearly half of the patients were found to have low knowledge of food groups. The majority did not know the recommended number portions for differing foods but did know fruit portion sizes, and were able to identify fatty foods and healthy snacks. They reported eating the recommended quantities of fruit but few ate enough vegetables. Most reported eating unhealthy

foods infrequently. The most commonly reported planned activity was walking and incidental activity was housework.

Patients found their health worker influenced them to make the lifestyle changes. The way CNP is delivered (group or individual sessions) needs to match patient preferences. It was realised that personal effort was required to make health changes. Their families and immediate communities are both sources of support and willing recipients of health information they subsequently share.

Summary

The CNP programme was able to increase the capacity of PHO's to deliver safe weight management programmes. Key successes included:

- Reducing the weight and BMI rates of the participants within 6 months.
- Increasing the nutrition knowledge of local Community Health workers.

The high attrition rate of the CNP staff and the degree of support required from the programme manager represents a risk to the programme. This suggests:

- It is important to engage the appropriate staff for training.
- It is important to provide ongoing support for trainees.

The findings also suggested that while the train the trainer model is an effective model for obesity management in Counties Manukau, some modification to the training might be required to meet the diverse cultural needs of local communities.

The impact of the CNP on the workloads of staff suggests the need for clarification of roles and responsibilities with partners. This would support programme implementation and possibly reduce attrition as demands on staff time are clear. Attrition rates would also be reduced through the provision of support for the trainees.