

The Women's Wellness with Type 2 Diabetes Program, an Australian-UK collaboration supporting women with diabetes

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The Women's Wellness Programs¹ – Background

‘Helping women be the best they can be’



Impact of Diabetes



- Non-communicable diseases like diabetes pose a significant threat to public health globally²



- Worldwide, it is estimated that Type 2 diabetes, is expected to increase by 205 million by 2035^{2,4}



- Type 2 diabetes accounts for around 85-90% of all cases of diabetes and is largely preventable, being caused by a combination of genetic and lifestyle factors^{2,3,4,5}



Diabetes Statistics in Australia and UK



Estimated cases of Type 2 diabetes:

- Globally 422 million²
- UK 3.8 million people living with a diagnosis of diabetes in the UK, and 90% of those have Type 2 diabetes³
- Australian 1 million Australian adults (5%) had type 2 diabetes in 2014–15⁴. Similar incidence among men and women (6% and 5%)⁴.

There are many, many more people living with Type 2 diabetes who don't know they have it because they haven't been diagnosed^{3,4}



Diabetes and Women

While rates of diabetes are increasing generally, particular groups of women have higher rates of overweight and obesity and are thus at increased risk of developing Type 2 diabetes⁷

- Women living in regional and remote areas are significantly more likely to report diabetes than those in major cities⁶
- Social disadvantage is linked with increased prevalence of diabetes and higher diabetes-related mortality rates⁷
- While diabetes is being diagnosed earlier now than previously, the physiological changes in metabolism and body composition and that occur during midlife may increase vulnerability in women even further^{8,9}



Issues for Women with Type 2 diabetes



- Loss of control
- Fear for the future
- A roller coaster ride
- Diabetes distress^{10,11}



Issues for Women with Type 2 diabetes

- Greater risk of heart disease and Stroke^{2,3,4}
- Combined with reduced blood flow, neuropathy (nerve damage) in the feet increases the chance of foot ulcers, infection and eventual need for limb amputation^{2,3,4}
- Diabetic retinopathy is an important cause of blindness, and occurs as a result of long-term accumulated damage to the small blood vessels in the retina. 2.6% of global blindness can be attributed to diabetes^{2,3,4}
- Diabetes is among the leading causes of kidney failure^{2,3,4}
- Fatigue^{12,13}
- Distress^{10,11}



Women's Wellness with Type 2 Diabetes Program - Aims

The WWDP program focuses on:

- Healthy eating with Type 2 diabetes
- Increasing exercise
- Maintaining healthy weight
- Identifying and managing Diabetes Distress
- Further chronic disease risk factor reduction
- Knowledge about menopause and health for women over 40
- Optimising health and energy
- Improving sleep
- Improving self-esteem and confidence




WOMEN'S WELLNESS
WITH TYPE 2 DIABETES PROGRAM



Feasibility Study

- Targeted women with Type 2 diabetes in Australia and UK
- Commenced 2016, completed 2018

	Australia Arm	UK Arm	Total
Total registered interest	53	96	149
Total consented to participate	35	37	72
Allocated to intervention	34	37	71
Baseline survey (T1) completed	31	37	68
Withdrawn or LTFU at T1	0	0	0
12 weeks survey completed	28	28	56
Withdrawn or LTFU at T2	3	9	12



Study Aims

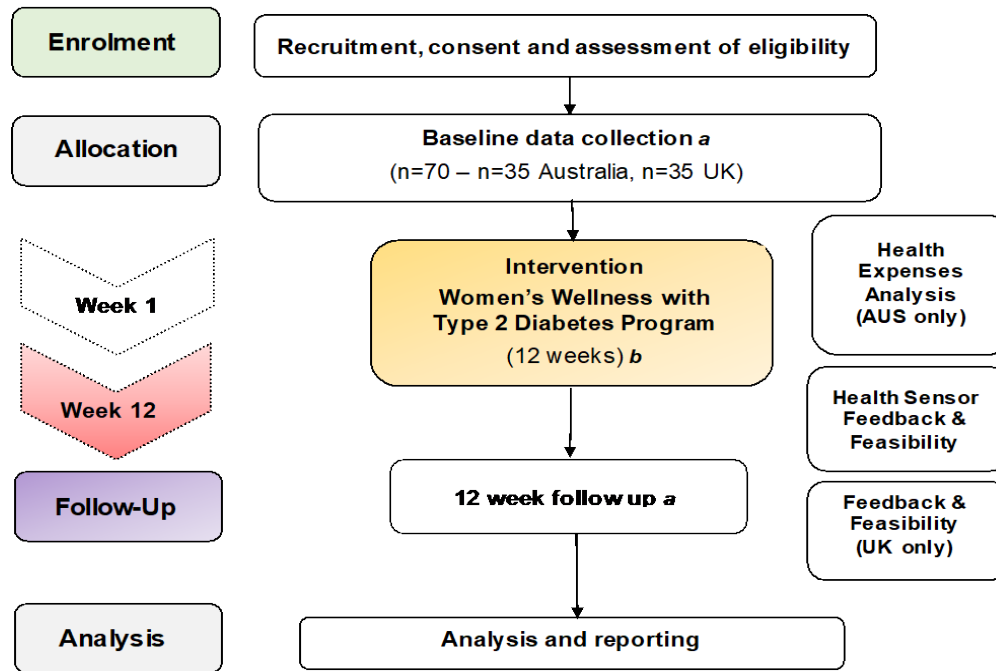
- Develop, trial and evaluate the clinical benefits and cost effectiveness of an e-health enabled structured health promotion intervention (the Women's Wellness with Type 2 Diabetes) targeted at improving health related quality of life (HRQoL) and diabetes distress (DD) while reducing key chronic disease risk factors in women with Type 2 diabetes
- Target specific needs of women with Type 2 diabetes including those in remote, rural and regional Australia and the United Kingdom



Methods

Methods / Design

The research design is a pre-test, post-test trial delivered in the UK from Kings College London and Australia from Griffith University .



a – all participants completed a structured online questionnaire and a virtual consultation with a research assistant (RA)

b – all participants received intervention and materials and virtual consultation appointments with a consultation nurse (CN)

Flow diagram for the WWDP study



Program – Key Targeted Knowledge and Behaviors

Knowledge / behavioural area	Targeted knowledge and behaviours
Physical activity	<p>Be moderately physically active, equivalent to brisk walking for at least 30 minutes per day</p> <p>As fitness improves, aim for 60 minutes or more of moderate physical activity, or for 30 minutes or more of vigorous physical activity every day</p>
Diet	<p>Eat mostly foods of plant based origin</p> <p>Limit consumption of energy dense foods</p> <p>Avoid sugary drinks and snacks</p> <p>Limit intake of red meat</p> <p>Manage portion size of meals</p>
Alcohol consumption	<p>Limit consumption of alcohol and ensure 2 alcohol free days a week</p> <p>If consumes, no more than one standard drink per day</p>
Smoking	Smoking cessation

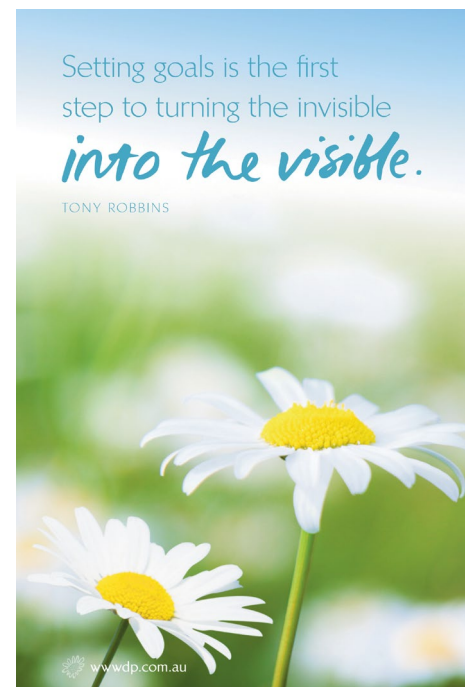


Program – Key Targeted Knowledge and Behaviors

Knowledge / behavioural area	Targeted knowledge and behaviours
Body fatness (body fat composition)	Be as lean as possible within the healthy weight range Avoid weight gain and increases in waist circumference
Stress and psychological wellbeing	Develop healthy stress management strategies Reduce anxiety and depression
Diabetes self-management	Medication concordance Blood glucose monitoring Managing clinical appointments
Preventative health and risk screening	Heart disease, eye health, feet health, renal health, breast and gynaecological health

Intervention Development

- Tailored graphic design
- Positive affirmations and quotes



Virtual delivery

Interactive website

Provides healthy living support and home monitoring of measurable health indicators

- Electronic journal
- Weekly exercise planner and schedule
- Community message board
- Modules to monitor goals versus actual performance
- Video pod casts
- Health professional support



Virtual delivery

- Interactive iBook
 - Self-learning
 - Self-motivation
 - Self-monitoring
 - Self Reflection

Stepwise approach applied
focusing on different
aspects of health



Virtual delivery

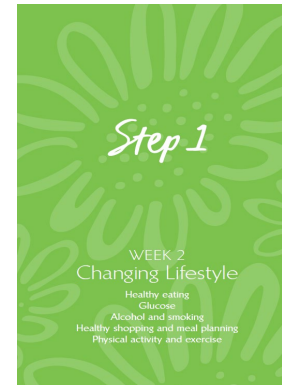
Virtual consultations

- Videoconferencing with a nurse trained in the intervention is conducted through the virtual platforms
- This enables remote access to advice and support from healthcare professionals in the participant's primary residence, reducing the need for travel which can be a key barrier to adherence



Steps to Health and Wellness

- Step 1 - Weeks 0-3
 - Changing lifestyle and learning about health
- Step 2 – Weeks 4-6
 - Consolidating a healthy lifestyle and learning more about health
- Step 3 – Weeks 7-9
 - Maintaining a healthy lifestyle and health promotion for illness prevention
- Step 4 – Weeks 10-12
 - Becoming independent



Evidence-based Health Promotion and Innovative Delivery Strategies

Week	Delivery strategies	Content
1	Virtual consultation delivered by trained diabetes nurse	Introduction to program. Physical activity, and healthy eating messages; goal setting; education; motivational interviewing; development of tailored health education and individualised plan and goals. Observational weight, and self measured height, waist/hip circumference measures discussed
3 , 9	Email communication, journal, health education material, website	Email to check progress, review plan and goals; develop a personal action plan; identify barriers, self monitoring, motivational messages sent as women reach set goals.
6,12	Virtual consultation delivered by trained diabetes nurse	Reviews of plan and goals; coaching; relapse prevention; motivational interviewing; biophysical measurements; review and discussion of observational weight and self measured height, waist /hip circumference measures.



Nurse Training

- Quality assurance was maintained by using experienced advanced practice nurses who have been trained in communication skills and in the use of the intervention.
- Nurses received a self-directed protocol manual, and participated in a two day skills development session.
- In the trials - A case review of at least one session per month per nurse was conducted to monitor adherence to study protocols.



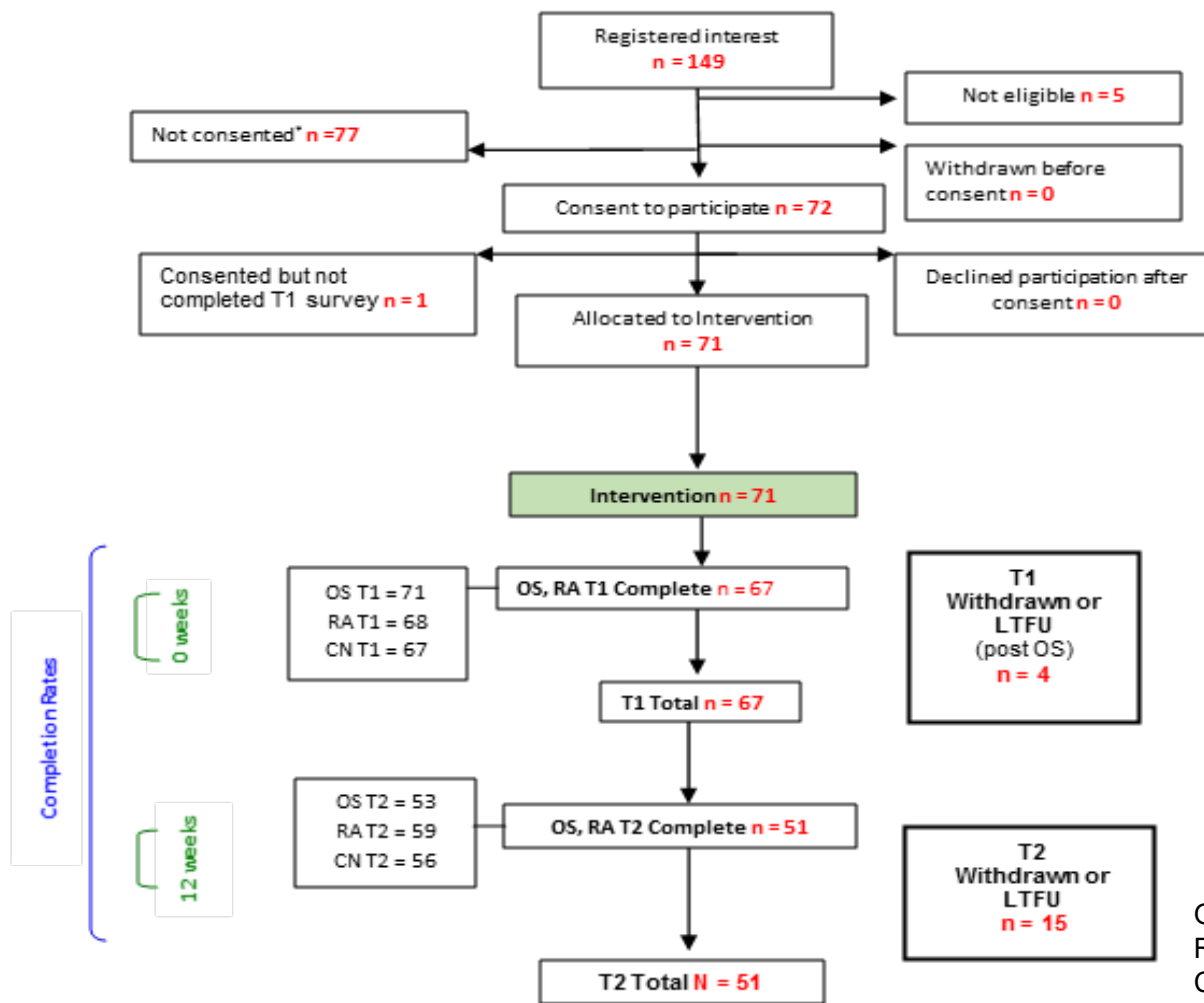
Measures

The primary outcome measure is change in health-related quality of life as measured by the Short Form 6D (SF6D)¹⁴, the European Quality of Life 5 (EQ-5D)¹⁵ and the Diabetes Distress Scale (DDS)¹⁶, secondary endpoints included:

- **Anthropometry** using standard protocols; including measures of height, weight, BMI and waist-to-hip ratio.
- **Habitual dietary intake** will be monitored using the Food Frequency Questionnaire (DQESv2)¹⁷
- **Physical activity** will be measured using the validated short International Physical Activity Questionnaire (IPAQ)¹⁸
- **Sleep activity and quality** will be measured using the General Sleep Disturbance Scale¹⁹



Study Consort (Australia and UK Combined)



OS = On Line Survey
 RA = Research Assistant
 CN= Consultation Nurse



Key Findings

Socio-Demographic data of study participants stratified by the study location

Socio-demographic Factor	Aus Arm (n=34)	UK Arm (n=36)
Age in years M(SD)	56.88 (6.31)	55.11 (5.45)
Years since Diagnosis M(SD)	8.76 (8.35)**	7.66 (7.19)
Treatment for Diabetes*		
No treatment	1 (3.2)	2 (5.6)
Dietary modification	10 (32.3)	11 (30.6)
Oral medication	26 (83.9)	22 (61.1)
Insulin	5 (11.9)	7 (19.4)
No response/Missing	3 (8.8)	
Marital status (%)		
Married	17 (50.0)	21 (58.3)
De facto	2 (5.9)	5 (13.9)
Separated	2 (5.9)	-
Divorced	6 (17.6)	3 (8.3)
Widowed	2 (5.9)	3 (8.3)
Never married	5 (14.7)	4 (11.1)
Employment status (%)		
Employed full-time	17 (50.0)	23 (63.9)
Employed part-time	7 (20.6)	7 (19.4)
Home duties	3 (8.8)	4 (11.1)
Unemployed	2 (5.9)	-
Full-time student	1 (2.9)	-
Retired	2 (5.9)	2 (5.6)
Permanently ill/unable to work	2 (5.9)	-



Key Findings

Socio-Demographic data of study participants stratified by the study location continued

Socio-demographic Factor	Aus Arm (n=34)	UK Arm (n=36)
Educational status (%)		
Junior high school/Secondary school	9 (26.5)	3 (8.3)
Senior high school/Sixth form	3 (8.8)	3 (8.3)
Trade, technical certificate or diploma	8 (23.5)	13 (36.1)
University or college degree	10 (29.4)	9 (25.0)
Postgraduate degree	4 (11.8)	8 (22.2)
Country of Birth		UK
Study Location (Aus/UK)	28 (82.4)	28 (77.8)
Other	6 (17.6)	8 (22.2)



Key Findings

Changes in psychological data from baseline to 12 weeks

Study Location	Australia		UK		Total	
Variables	Baseline M(SD)	Endpoint M(SD)	Baseline M(SD)	Endpoint M(SD)	Baseline M(SD)	Endpoint M(SD)
DMSES		n=26		n=27		n=53
	145.42 (34.25)	153.31 (33.72)	133.78 (36.18)	156.70 (42.73)	139.49 (35.40)	155.04 (38.24)
Diabetes Distress		n=28		n=28		n=56
Total DDS	2.04 (0.90)	1.72 (0.84)	2.89 (1.12)	2.03 (0.64)	2.46 (1.10)	1.88 (0.76)
Emotional burden subscale	2.03 (1.06)	1.74 (0.88)	2.83 (1.25)	1.92 (0.69)	2.43 (1.22)	1.83 (0.79)
Physician-related distress subscale	1.54 (1.00)	1.63 (1.26)	2.54 (1.66)	1.86 (1.05)	2.04 (1.45)	1.75 (1.16)
Regimen-related distress subscale	2.58 (1.33)	2.18 (1.26)	3.34 (1.38)	2.18 (1.03)	2.96 (1.40)	2.18 (1.14)
Interpersonal distress subscale	1.75 (1.09)	1.69 (1.16)	2.70 (1.54)	2.23 (0.99)	2.23 (1.41)	1.96 (1.10)
Presence of elevated Diabetes Distress		n=31		n=37		n=68
	8 (25.8)	3 (10.7)	13 (35.1)	2 (7.1)	11 (16.18)	5 (9.26)

Bold indicates significant
MD(SD): Mean (Standard Deviation)



Key Findings

Changes in physical data from baseline to 12 weeks

Variables	Australia		UK		Total	
	Baseline M(SD)	Endpoint M(SD)	Baseline M(SD)	Endpoint M(SD)	Baseline M(SD)	Endpoint M(SD)
Weight (kg)	n=25		n=26		n=51	
	93.30 (18.89)	90.79 (18.92)	85.18 (22.65)	83.41 (21.78)	89.16 (21.09)	87.03 (20.56)
Body Mass Index (BMI)	n=25		n=25		n=50	
	34.62 (7.38)	33.66 (7.22)	32.53 (8.86)	31.89 (8.64)	33.58 (8.14)	32.77 (7.93)
Waist circumference (cm)	n=25					
	109.06 (15.02)	105.52 (14.33)	-	-	-	-
Hip circumference (cm)	n=25					
	118.09 (15.18)	114.22 (14.15)	-	-	-	-
Waist-Hip Ratio (WHR)	n=25					
	0.93 (0.09)	0.93 (0.10)	-	-	-	-

Bold indicates significant
MD(SD): Mean (Standard Deviation)



Key Findings

Changes in physical data from baseline to 12 weeks continued

Study Location	Australia		UK		Total	
Variables	Baseline M(SD)	Mdn[IQR]	Endpoint M(SD)	Mdn[IQR]	Baseline M(SD)	Mdn[IQR]
Menopausal symptoms	n = 27		n=27		n=54	
Psychological	8.22 (5.65)	6.96 (5.16)	8.30 (6.06)	5.63 (3.56)	8.26 (5.80)	6.30 (4.44)
Psychological anxiety	4.30 (2.85)	3.56 (2.75)	4.04 (3.20)	2.96 (1.74)	4.17 (3.01)	3.26 (2.30)
Psychological depression	3.93 (3.15)	3.41 (2.89)	4.26 (3.12)	2.67 (2.30)	4.09 (3.11)	3.04 (2.61)
Somatic	5.48 (3.83)	4.56 (3.26)	3.52 (2.64)	2.52 (2.24)	4.50 (3.40)	3.54 (2.96)
Vasomotor	1.89 (1.87)	1.41 (1.62)	2.00 [4.00]	1.00 [2.00]	1.94 (1.77)	1.28 (1.47)
Total GCS	16.85	14.07 (8.58)	15.11 (9.92)	10.19 (5.90)	15.98 (10.33)	12.13 (7.55)
	(10.85)					

Bold indicates significant
MD(SD): Mean (Standard Deviation)



Key Findings

Changes in physical data from baseline to 12 weeks continued

Study Location	Australia		UK		Total	
Variables	Baseline M(SD)	Endpoint M(SD)	Baseline M(SD)	Endpoint M(SD)	Baseline M(SD)	Endpoint M(SD)
Sleep	n=26		n=27		n=53	
Sleep onset latency	2.65 (2.02)	2.31 (2.29)	2.11 (2.12)	1.11 (1.55)	2.38 (2.07)	1.70 (2.02)
Mid sleep awakening	4.31 (2.26)	3.62 (2.42)	4.93 (2.34)	4.63 (2.56)	4.62 (2.30)	4.13 (2.52)
Early awakening	2.35 (2.13)	2.62 (2.47)	3.59 (2.58)	2.78 (2.58)	2.98 (2.43)	2.70 (2.50)
Quality of sleep	9.19 (3.26)	7.77 (3.68)	8.22 (4.24)	8.19 (3.81)	8.70 (3.79)	7.98 (3.71)
Quantity of sleep	4.19 (3.05)	3.58 (2.56)	3.93 (2.70)	2.67 (2.30)	4.06 (2.85)	3.11 (2.45)
Use of sleep inducing substances	2.69 (3.56)	2.23 (3.35)	0.59 (1.25)	0.37 (1.24)	1.62 (2.83)	1.28 (2.66)
Fatigue/alertness at work	14.65 (9.06)	13.96 (9.55)	12.89 (7.26)	12.85 (5.52)	13.75 (8.16)	13.40 (7.71)
Overall GSDS score	40.04 (13.45)	36.08 (14.75)	36.26 (13.55)	32.59 (11.29)	38.11 (13.50)	34.30 (13.09)

Bold indicates significant
MD(SD): Mean (Standard Deviation)



Key Findings

Changes in health behaviours data from baseline to 12 weeks

Study Location	Australia		UK		Total	
Variables	Baseline	Endpoint	Baseline	Endpoint	Baseline	Endpoint
Physical activity in minutes per week	n=31	n=28	n=37	n=28	n=68	n=56
Mdn[IQR]	565.00 [1144.00]	954 [1988.00]	1512.00 [2299.5]	1298.50 [1950.5]	990.00 [1578.25]	1107.00 [2192.25]
Mean Fruit and Vegetables M(SD)	4.29 (2.05)	5.88 (1.75)	5.07 (2.47)	5.70 (1.92)	4.66 (2.28)	5.79 (1.82)
Meeting Australian Vegetable Recommendations (n=26)						
Yes	6 (23.1%)	14 (53.8%)	-	-	-	-
No	20 (76.9%)	12 (46.2%)	-	-	-	-
Meeting Australian Fruit Recommendations (n=26)						
Yes	11 (42.3%)	22 (84.6%)	-	-	-	-
No	15 (57.7%)	4 (15.4%)	-	-	-	-
Meeting UK Combined Fruit and Vegetable Recommendations (n=24)						
Yes	-	-	15 (62.5%)	17 (70.8%)	-	-
No	-	-	9 (37.5%)	7 (29.2%)	-	-

Bold indicates significant

MD(SD): Mean (Standard Deviation)



Key Findings

Key themes generated from qualitative interviews

Domains	Themes
1. Hope for a better everyday life	1.1 Better self-care and diabetes management
	1.2 Support at the time of need
	1.3 Knowledge improvement
	1.4 Keep oneself motivated
	1.5 Expectations versus achievements
2. Experience of data collection process	2.1 Sign up and registration process
	2.2 Usability of online questionnaires
	2.3 Use of interactive web based approach
	2.4 Comparison between Skype/Facetime and online questionnaire
	2.4.1 Equally easy process
	2.4.2 In favour of using web-based approach
	2.4.3 In favour of online questionnaires
2.4.4 Non users of technology	
	2.5 Understanding individual health and personal data
3. Reflections on the joint nature of the program	
4. Mixed feelings towards workplace intervention	4.1 Positive feelings towards workplace intervention
	4.2 Negative feelings towards workplace intervention



Significance and Future Direction



- This study sought to establish the impact of WWDP in Australia and the UK to inform progression to a larger trial
- To our knowledge, no other study has examined the effect on an eHealth enabled, multi-behavioral lifestyle intervention on midlife women with type 2 diabetes
- The novelty of this study and its investigation of the different outcomes will prove key insight into the problems they encounter and potential gaps in care for midlife women



Thankyou & Questions

For more information please contact us via:



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