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An Impact evaluation of a Lifestyle management program in a Multinational Corporation setting- A quasi experimental study

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UNDER GUIDANCE OF **Dr PREETHA G.S.**

Executive Summary

1. Non –communicable diseases not only take a tremendous toll on premature disability and death but also have major economic impact on healthcare system and leads to increase out of pocket expenditure. It is estimated that 75% of cardio-vascular disease (CVD), and diabetes be managed or controlled by maintaining healthy diet habits, regular exercising, and refraining from smoking.

2. The research aims to evaluate the impact of a lifestyle intervention program (health coaching) on Clinical and behaviours outcomes of lifestyle disease among the corporate employees.

3. A one group pre-post quasi experimental study was conducted among 261 employees of a multinational corporate setting at five locations (Delhi, Bangalore, Chennai, Kolkata, and Ahmedabad) from January, 2019 to May, 2019. Lifestyle intervention- Health coaching (10 sessions in 5 months) was given to the study participants. Microsoft excel and SPSS 16.0 was used for data analysis.

4. **Analysis.** In our study, it is evident that health coaching has significantly improved the clinical and behavioural outcome in the vulnerable population. 37.5% were diabetic, 46.5% were hypertensive and 16.1% were both. Clinical outcome improved significantly as HbA1c decreased from 6.96 ±1.63 to 6.37±1.18 (P=0.00), LDL decreased from 142.6±25.7 to 130.7± 24.8 (p=0.00), HDL improved from 39.3±8.47 to 40.9±11.4 (p=0.01), Total cholesterol reduced from 213.1±39.1 to 203.4±36.3 (0.00) and systolic BP reduced from 146.3±18 to 140.3±19 (0.00) over the 5-month. Although for BMI and diastolic BP results were insignificant. It also led to significant improvement in self-reported behaviours of physical activity and healthy eating choices. Similar trends were also observed with self-efficacy measures.

5. Recommendation: Collaborative partnerships: Corporates to engage in evidence based lifestyle management program focusing the target population. Insurance companies should engage to foster collaborative partnership with the other organizations.

Bridging the gap: Health coaching act as a bridge between doctors and patient.

Community engagement: Health coaching should be facilitated on community level by training the workers for targeted population for specific diseases.

Bridging the gap: Health coaching should be facilitated on national level by providing provision of certificate courses.

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List of Abbreviations

NCD	Non –communicable diseases
CVD	cardio vascular disease
CHD	Congenital Heart disease
BMI	Body Mass Index
HDL	High-density Lipoprotein
LDL	Low-density Lipoprotein
BP	Blood Pressure
CI	Confidence Interval
SD	Standard Deviation

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Introduction

1. Introduction

Lifestyle diseases like hypertension, Diabetes, atherosclerosis, Heart disease, Ischemic stroke are Non –communicable diseases (NCDs) which leads to premature morbidity and mortality. Lifestyle diseases or non-communicable diseases are emerging as the most severe health problem in India.

Non –communicable diseases not only take a tremendous toll on premature disability and death but also have major economic impact on healthcare system and leads to increase out of pocket expenditure. India is facing rapid transition in health with rising burden of cardio vascular disease (CVD).[1] Cardio vascular diseases are among the leading cause of mortality in India. There is increase in the prevalence of many risk factors which contribute to the development of chronic diseases and strengthens the need of preventive interventions to reduce the increasing prevalence of the risk factors.[2]

According to WHO, 80% of the global deaths are due to chronic diseases that are occurring in the developing countries among which cardiovascular disease being on top with 40%.[3] Majority of NCDs including cardio-vascular disease (CVD) and diabetes can be averted by maintaining healthy behaviour including dietary habits, regularly exercising, and refraining from smoking. As the prevalence of NCDs is increasing, regular interactive Lifestyle programs like health coaching involving small groups targeting the vulnerable group of the population is the need of the hour.

Heath coaching enables to build a partnership with coach, shared decision making, engagement, makes one the in charge of their own health

Health coaching is a novel approach to diabetes prevention that offers a focused self-management support program. Health education alone may not sufficiently initiate and sustain long term behavioral change; there are situations where wellness coaches can better enhance motivation, and guide patients towards behavior change.

A health coach can help provide but not limited to support in following:

SELF-CARE SUPPORT	NAVIGATING THE HEALTHCARE SYSTEM	PROVIDING EMOTIONAL SUPPORT	CONTINUITY

• By learning disease-specific skills • Providing behavior change • By encouraging problem-solving action • Providing emotional support to the vulnerable • Continuous follow up • Encouraging participation and adherence • Providing insightful information	•Serving as bridge between physician and patient •To make patient understands and follow with care plan •Providing sociocultural concordance	•Bridging the patient to the resources •Facilitating the care support •Empowering the people •Ensuring the one's voice will be heard	•Showing trust and interest •Getting to know the emotional issues •Showing empathy and compassion •Teaching the patient with the coping skills

1.2 Problem Statement:

Non–communicable diseases (NCDs) like hypertension, Diabetes, atherosclerosis, Heart disease, Ischemic stroke are which leads to premature morbidity and mortality. Lifestyle diseases or non-communicable diseases are emerging as the most severe health problem in India. There is increase in the prevalence of many risk factors which contribute to the development of chronic diseases and strengthens the need of preventive interventions to reduce the increasing prevalence of the risk factors.

Lifestyle programs like health coaching involving small groups targeting the vulnerable group of the population help in preventing or controlling these condition.

Evidence based intervention such as health coaching are critical to reduce the occurrence of lifestyle diseases and associated complications and it is imperative to conduct more research in this direction. Hence we took up this study to assess the impact of lifestyle intervention on clinical and behavioral outcome these diseases among the study subjects.

1.3 Rationale of the Study:

As the prevalence of the chronic diseases and their risk factors is increasing the quality of life is hampered, leading to increase morbidity and mortality; and it also leads to the increase health care out of pocket expenditure. Corporate population usually engages in a sedentary lifestyle as they have long sitting hours and lack of physical activity due to strict job hours, so it is vital to spread awareness among them and time to time assess their risk factor and take appropriate action if necessary.

These conditions can be averted if one engages or adopts a healthy lifestyle behaviour hence it become imperative to promote lifestyle intervention targeting these risk factor. Health coaching is one of such lifestyle intervention which helps manage or prevent these conditions by improving the self-care management incorporating behavioural modification. Effectiveness of health coaching is document but further more research is required in this direction hence we conducted this study to evaluate the impact of a lifestyle intervention program on Clinical and behaviors outcomes of lifestyle disease among the employees.

Review of Literature

2. Review of literature:

Several studies conducted in India had shown an increase in the prevalence of many risk factors contributing for chronic diseases and strengthens the needs of interventions to reduce the prevalence of these risk factors. There is thus a widespread scientific and public health consensus that the likelihood of developing chronic diseases linked to the exposure of an individual, community or population to a cluster of behavior risk factors such as tobacco use, unhealthy diets and physical inactivity.

Lifestyle diseases like hypertension, Diabetes, atherosclerosis, Heart disease, Ischemic stroke are Non –communicable diseases (NCDs) which leads to premature morbidity and mortality. Lifestyle diseases or non-communicable diseases are emerging as the most severe health problem in India.

Non –communicable diseases not only take a tremendous toll on premature disability and death but also have major economic impact on healthcare system and leads to increase out of pocket expenditure. India is facing rapid transition in health with rising burden of cardio vascular disease (CVD).[1] Cardio vascular diseases are among the leading cause of mortality in India. There is increase in the prevalence of many risk factors which contribute to the development of chronic diseases and strengthens the need of preventive interventions to reduce the increasing prevalence of the risk factors.[2]

These conditions can be averted if one engages or adopts a healthy lifestyle behaviour hence it become imperative to promote lifestyle intervention targeting these risk factor. Health coaching is one of such lifestyle intervention which helps manage or prevent these conditions by improving the self-care management incorporating behavioural modification. Effectiveness of health coaching is document but further more research is required in this direction hence we conducted this study to evaluate the impact of a lifestyle intervention program on Clinical and behaviors outcomes of lifestyle disease among the employees.

Objective & Research Question

3. OBJECTIVES

3.1 General Objective.

To evaluate the impact of a lifestyle intervention program on Clinical and behaviors outcomes of lifestyle disease among the employees.

3.2 Specific Objectives.

Enumerated as under: -

a) To Identify employee population at risk for developing chronic diseases and conditions

b) To evaluate the impact of a lifestyle intervention program on HbA1c, BMI, Blood pressure and total cholesterol

c) To assess the impact of program on self-reported level of physical activity and healthier food choices

d) To assess the impact of the program on the self-efficacy

3.3 Research Question

This study aims to answer the following questions:

1. Does a lifestyle intervention on multinational corporate employees result in changes to glycated haemoglobin (HbA1c), body mass index (BMI), Blood pressure, HDL, LDL, total cholesterol from baseline to five months? (Primary outcome)

2. Does the intervention impact the dietary and physical activity behaviours, disease or events (secondary outcomes)?

3. What is the prevalence of Diabetics, hypertensive or employees having both?

4. Does the intervention lead to improved self-care management at 5 months?

Methodology

4. METHODOLOGY

4.1 Study Area:

There have been numerous studies on the effects of health coaching on clinical and behavioural outcomes of chronic disease and their risk factors in various parts of the country and in other countries as well. The present study was conducted to evaluate the impact of health coaching intervention on risk factors of chronic disease to further strengthen the evidence and to improve the health status of the study subjects. The study was conducted in Multinational corporate setting, having about 350,000 employee strength, as the corporate employee engage in sedentary lifestyle of is more common in tertiary care hospitals and it has been supported by various studies. Delhi, Bangalore, Mumbai and Bhuvneshwar were selected as study locations in order to include the perspective of surgeon from all four regions of India- North, South, West and East.

4.2 Study Design:

A one-group pre-post Quasi experimental design study was carried out amongst the employees of a multinational corporate setting at five locations (Delhi, Bangalore, Chennai, Kolkata, and Ahmedabad). The study was conducted from January 1st, 2019 to May 31st, 2019. A total of 261corporate employees completed the 10 sessions of the health coaching (lifestyle intervention). The study includes the impact of lifestyle management program incorporating health coaching on clinical and behavioural outcomes.

4.3 Study Population:

The study was conducted among the employees of a multinational corporate having specific inclusion criteria. As corporate employees usually face sedentary lifestyle due to their long sitting hour job.

Inclusion criteria:

- Working in multinational company
- Having more diabetes or hypertension or both of these
- Apollo Munich Health Insurance policyholder

4.4 Study Variables: Various factors have selected as study variables and then made into operational variables/matrix. The same has been shown in the form of Tables 1.

Independent variables:	Dependent variables
Health coaching Diet counselling Physical activity	HbA1c BMI Systolic BP Diastolic BP LDL HDL Total cholesterol

Table No.1: Study variables

Variables	Operational Definitions (Indicator)
Obesity/overweight	Reported height and weight equalling body mass index ≥27.5
Blood Sugar	Reported HbA1c ≥6.4% Above 6.4% = Diabetes 5.7 to 6.4% = Prediabetes <5.7% = Normal
Blood pressure	Reported systolic blood pressure > 139 mmHg or diastolic > 89, or currently have high blood pressure, or currently take medication, or under medical care for blood pressure
Cholesterol **LDL** **HDL**	Reported total cholesterol > 239 mg/dL, Reported LDL > 160 mg/dL Reported HDL<40 mg/dL
Smoker	Described cigarette smoking habits as "still smoke"

Table No.2: Detail of Study Variables

4.5 Sample size and Sampling:

A convenience sample with a 95% CI (10%) was taken with the formulae ($n=z^2pq/d^2$) to obtain 122 as sample size. However, 261subjects were assessed for the study which is more than even the calculated sample. The details of the calculation are as under:-

- Sample size: $n = z^2pq/d^2$
  - Standard error = 10/2 = 5
  - Sample size = $(1.96)^2 \times 8.7 \times 91.3/(5)^2 = 3.84 \times 794/25 = 122$

    (Prevalence of diabetes is 8.7 % in India)[39]
- Sampling method – Non probability, convenience sampling.

4.6 Data Collection tools and techniques: The following was the modus operandi:-

a) The investigator introduced him/her to the employees, the objectives of the study were explained and confidentiality of the participants was assured and informed consent was taken.

b) Anthropometric measurements (weight, height, and waist circumference) were taken at the start of the program and blood pressure were taken with digital monitor at rest at baseline and post intervention. The mean value of two measures was used to define high blood pressure.

c) For Clinical Data like HbA1c, LDL, HDL, Total cholesterol (Wellness test one at 1st and wellness test two at 5th month), blood sample was collected from the employees by professional lab staff rest at baseline and post intervention.

4.7 Data Analysis:

The collected data was analyzed manually as well as by using Microsoft Excel 2010 and SPSS16.0. It has been presented as described below: -

(a) Data has been presented descriptively along with tables and graphs/charts.

(b) Improvement in clinical outcome was shown as mean (SD) and Paired sample t test as test of significance was used.

(c) For behavioural outcomes Mean of scores was presented with Wilcoxon test being used and p value of 0.05 was considered to be statistically significant.

(d) Factors were categorised, data analysed and presented in form of tables, graphs and charts.

4.8 **Budget**. The budget was estimated considering the following parameters:-

Event		**Total cost (RS)**
Health coaches	Three coaches	4,50,000
Wellness test	Two times at baseline and at 5th month	3,13,200
Transport allowances	For Two team members	12,000
Communication (WhatsApp and SMS)	-	10,000
Total		**7,85,200**

Table No.3: Budgetary details

4.9 **Work Plan**. The following schedule has been followed in the subject study with D day (commencement of activities) being 21st January,2019:-

S. No	Activity	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	Proposal development																																							
2	Finalization of data collection and operational plan																																							
3	Tools development																																							
4	Adaptation and translation of tools																																							
5	Pretesting of questionnaire and revision of tools																																							
6	Revision of tools																																							
7	Fieldwork Plan																																							
8	Data Collection																																							
9	Data entry																																							
10	Data analysis																																							
11	Findings and report submission																																							

Fig.No.1: Day wise work plan

4.10. **Limitations**. The study was conducted under the following limitations, for the sake of simplicity and correct imbibing of the concepts: -

- **Time**. Limited time was available for conduct of research.
- **Causality:** Cannot establish causality as control group is not there for comparison.
- **Possible Selection bias**: as only those who has a policy in Apollo munich health insurance were selected.
- **Generalizability** cannot be assured as there was no randomization among the study subject.

4.11 The Intervention

The life style intervention implied here is health coaching.

This program was of 5-month duration where in the informed consent was taken from the participants. Then participants receive health coaching along with their pre and post clinical and behavioural measurement taken. The details of the program conceptual framework is given in Fig. No 2.

As a part of the process, In the first visit, a small amount of blood, equal to about a teaspoon, will be taken from the arm with a syringe. This blood will be tested for Blood sugar, Cholesterol. Also asked a few questions about general health and measure the BP and also measure how tall participant are and how much they weigh.

- Once the BP is measured and Blood sample is collected, a welcome call will be made by Health coach (certified and trained dietician) to each participant and for five months each month two calls will be made which will include goal setting, Barrier identification; counselling for physical activity, diet and drug compliance.

- At the end of the program, you will be visited again by lab staff for Blood Pressure measurement and blood sample collection to check for the changes.

The detailed process is explained with help of the Fig. No. 3 as customers journey.

Health Coaches are trained to provide the information about chronic diseases like diabetes and healthy behaviour and lifestyle choices specially pertaining to the physical activity and diet or nutrition; and to help patients with the medication understanding and the adherence; and also to work collaboratively with participants to create the actions plans around the behavior and their routine activities.

Below is the program framework:

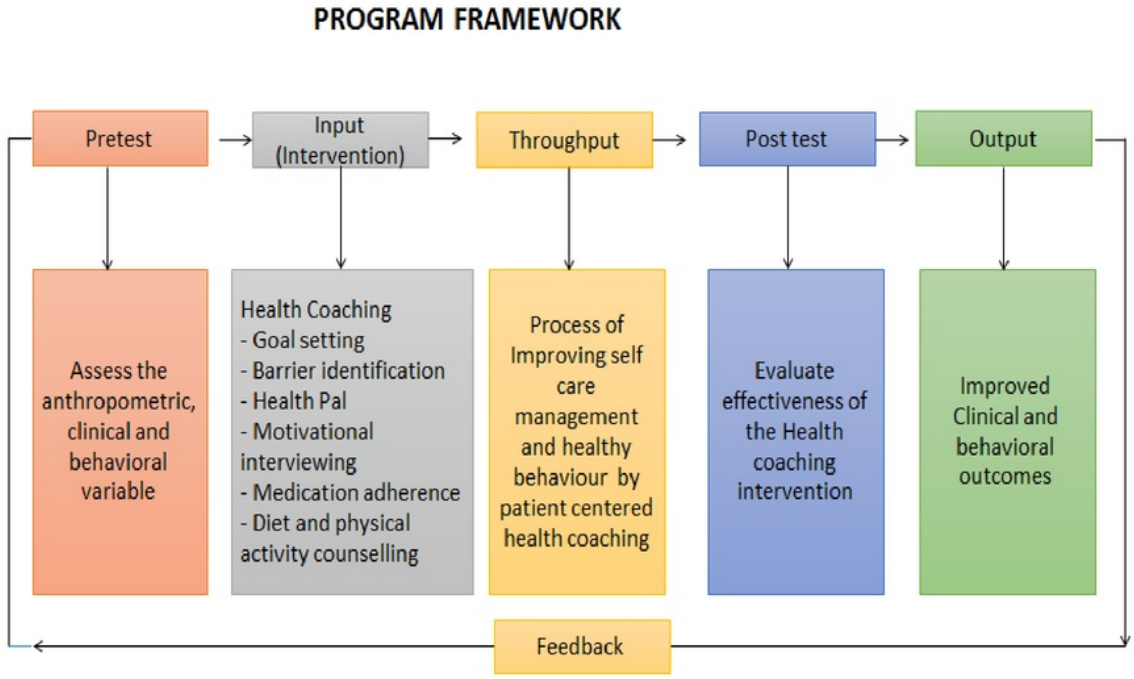

Fig No.2: Program Framework

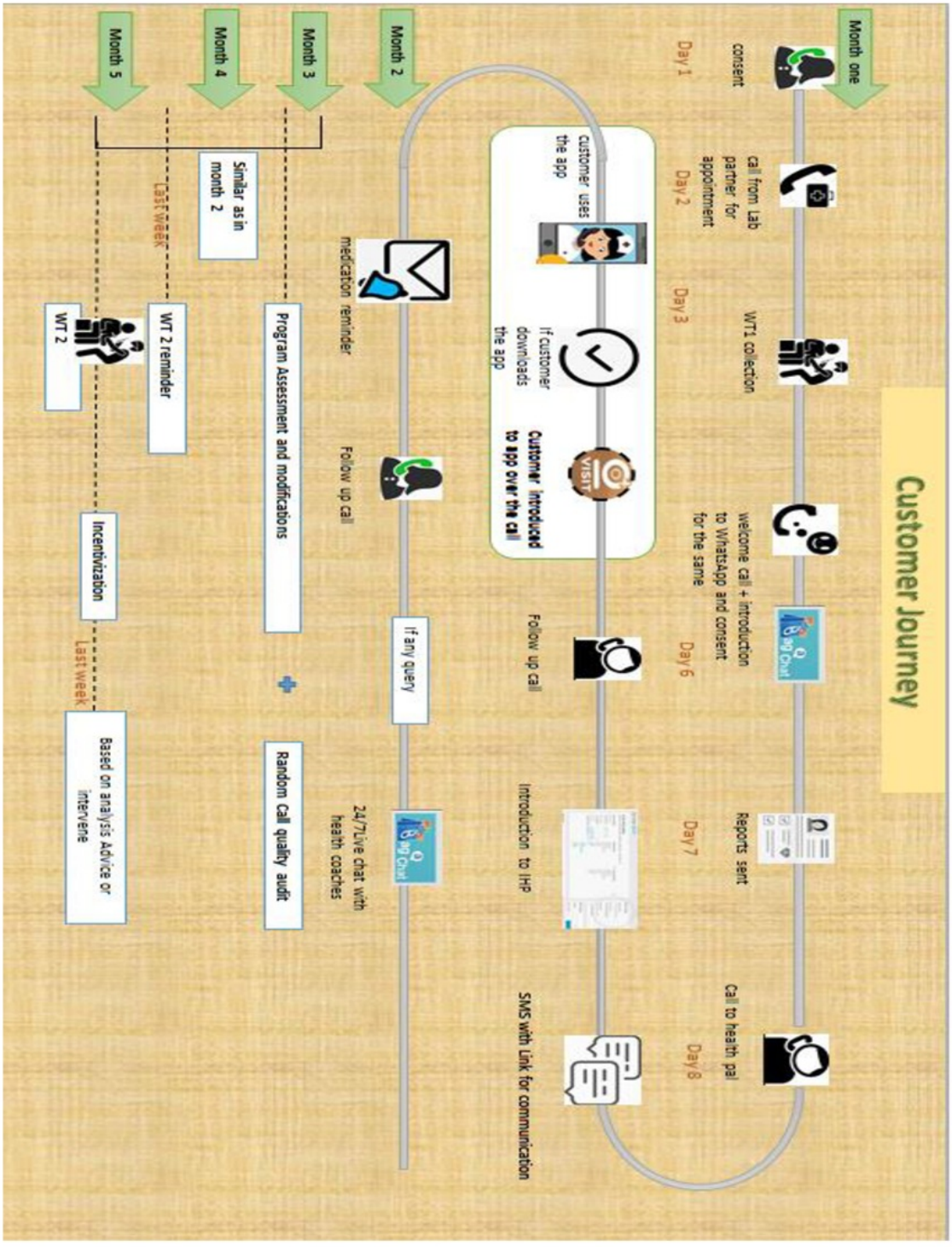

Figure No.3: Customer Journey

Study Findings

5.1 Background of the participants:

The study was conducted on a employees of a multinational company with a pre existing condition of diabetes or hypertension. The following figure shows the distribution of diabetic and hypertensive among the study population:

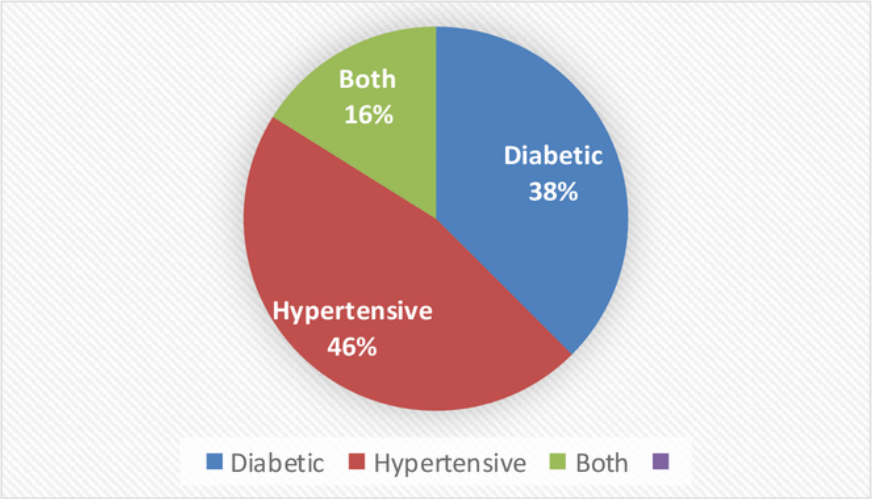

Fig No. 2 : Pre-existing condition

5.1.2 Co-habitation

Co-habitation (people living with family) percentages of the study population are shown in the Figure below:

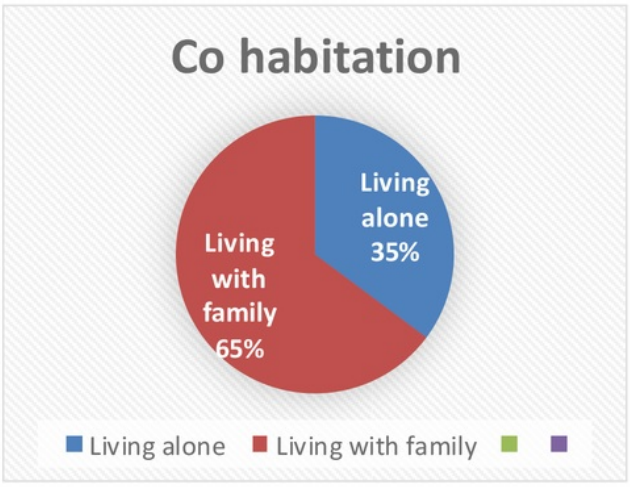

Fig No. 3 : Ratio of Co-habitation

5.1.3 Gender Classification:

The gender classification of the study population included in the study is specified in figure 4.

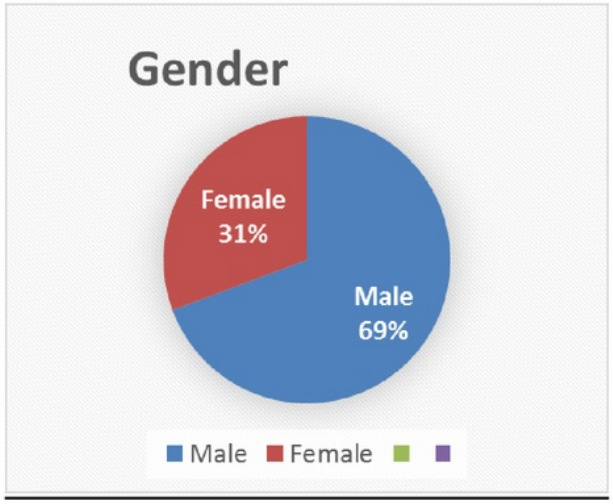

Fig No. 4 : Gender classification

5.1.4 Smoking Status

The status of smoking among the study population is represented in the below figure No.5

Fig No.5: Smoking Status

5.2 Impact of Intervention on Clinical Outcomes

5.2.1 HbA1c

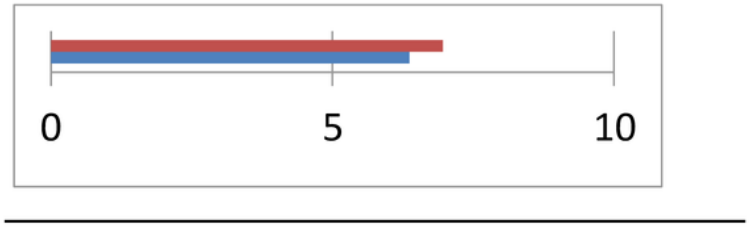

Figure No.6: Mean HbA1c Pre & Post Intervention (Overall)

The Mean of HbA1c has been reduced from 6.96 (with standard deviation 1.63) to 6.37 (with standard deviation 1.18). This indicates an improvement of 8.5%, while the p value (0.00) indicates that the change is statistically significant.

Among the diabetic population (pre-test HbA1c >6.4) the improvement percentage is 9.4% as shown in the below graph. Pre-test mean 8.17 (SD 1.22) and post-test mean was 7.42 (1.16).

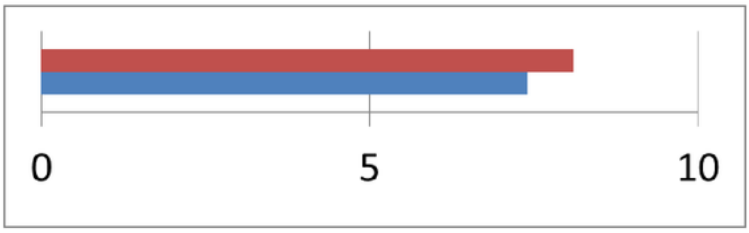

Figure No.7: Mean HbA1c Pre & Post Intervention (Diabetic)

Among the pre-diabetic population (pre-test HbA1c 5.7~6.4) the improvement percentage is 7.1% as shown in the below graph. Pre-test mean 6.12 (SD 1.74) and post-test mean was 5.69 (SD 1.32).

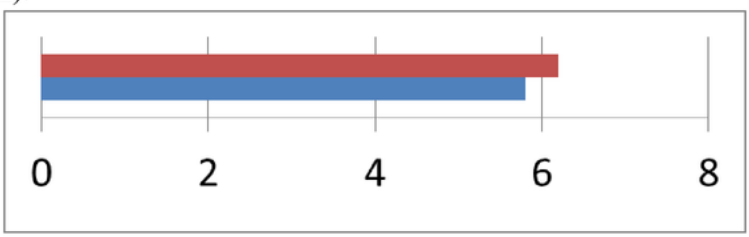

Figure No.8: Mean HbA1c Pre & Post Intervention (Pre-Diabetic)

5.2.2 BMI (Body Mass Index)

The Mean of BMI has been reduced from 25.2 (with standard deviation 4.1) to 24.9 (with standard deviation 3.94). This indicates an improvement of 0.8%, while the p value (0.69) indicates that the change is not statistically significant.

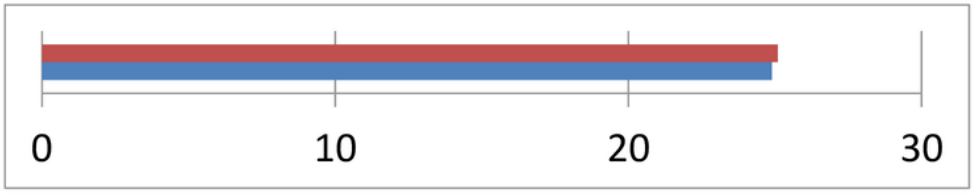

Figure No.9: Mean BMI Pre & Post Intervention

5.2.3 LDL Cholesterol

The Mean of LDL (Low density lipo-proteins) cholesterol has been reduced from 142.6 (with standard deviation 25.7) to 130.7 (with standard deviation 24.8). This indicates an improvement of 8.2%, while the p value (0.00) indicates that the change is statistically significant.

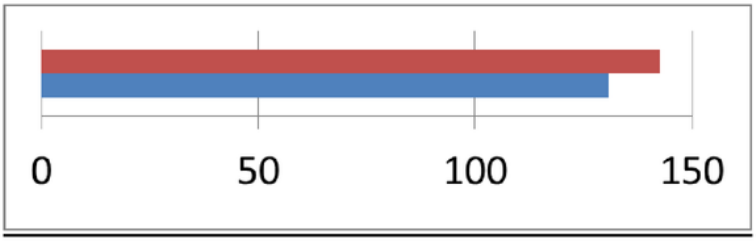

Figure No.10: Mean LDL Pre & Post Intervention

5.2.3 HDL Cholesterol

The Mean of HDL (High density lipo-proteins) cholesterol has been increased from 39.3 (with standard deviation 8.47) to 40.9 (with standard deviation 11.4). This indicates an improvement of 3.9%, while the p value (0.01) indicates that the change is statistically significant.

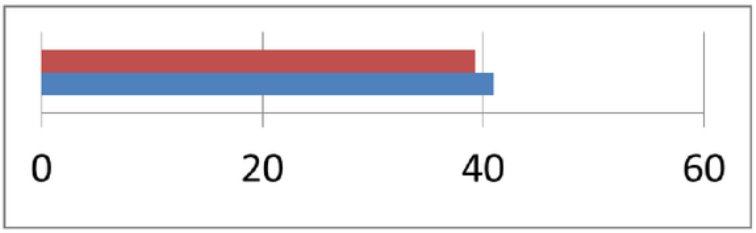

Figure No.11: Mean HDL Pre & Post Intervention

5.2.4 Total Cholesterol

The Mean of Total cholesterol has been reduced from 213.1 (with standard deviation 39.1) to 203.4 (with standard deviation 36.3). This indicates an improvement of 4.5%, while the p value (0.00) indicates that the change is statistically significant.

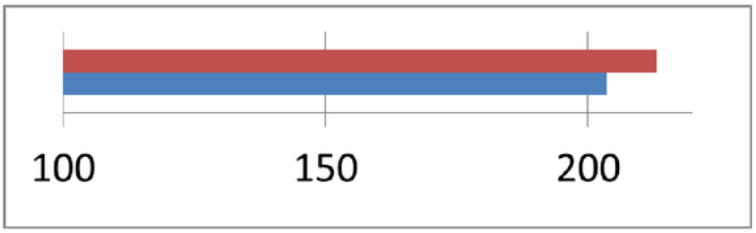

Figure No.12: Mean Total Cholesterol Pre & Post Intervention

5.2.5 Systolic Blood Pressure

The Mean of Systolic BP has been reduced from 146.3 (with standard deviation 18.0) to 140.5 (with standard deviation 19.2). This indicates an improvement of 3.9%, while the p value (0.001) indicates that the change is statistically significant.

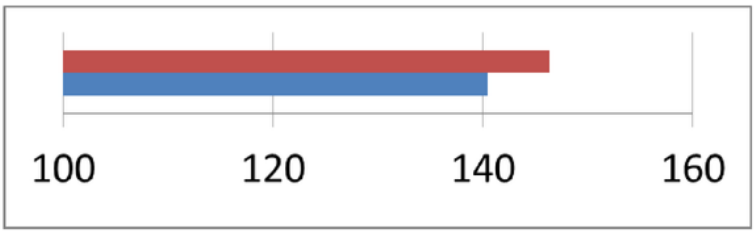

Figure No.13: Mean Systolic BP Pre & Post Intervention

5.2.5 Diastolic Blood Pressure

The Mean of Diastolic BP has been reduced from 77.65 (with standard deviation 10.25) to 76.5 (with standard deviation 9.2). This indicates an improvement of 1.5%, while the p value (0.128) indicates that the change is not statistically significant.

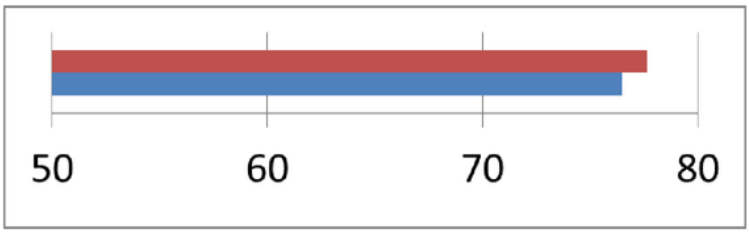

Figure No.14: Mean Diastolic BP Pre & Post Intervention

5.3 Impact of Intervention on Behavioural Outcomes:

Exercise and healthy eating behaviours were evaluated pre & post intervention.

5.3.1 Stretching and strengthening Exercises:

The categorization of time spent per week doing stretching and strengthening exercises is done 0 (No exercise), 1 (0~30 mins/week), 2 (30~60 mins/week), 3 (1~3 hrs/week), 4 (> 3 hrs/week).

Score is assigned for each category is 0 : 0, 1 : 15, 2 : 45, 3 : 90, 4 : 180

The Mean of score for stretching and strengthening exercises has been increased from 26.5 (with standard deviation 48.6) to 48.6 (with standard deviation 56.8). This indicates an improvement of 83.3%, while the p value (0.001) indicates that the change is statistically significant.

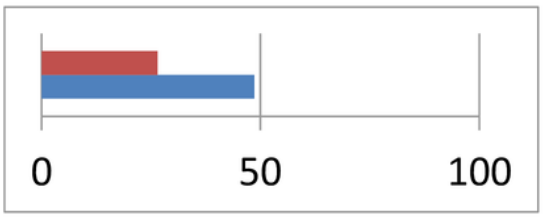

Fig No.15: Mean Score of Streching and Strengthening Exercises

5.3.2 Aerobic Exercises:

The categorization of time spent per week doing aerobic exercises (includes walking, swimming, running or any other aerobic activity) is done 0 (No exercise), 1 (0~30 mins/week), 2 (30~60 mins/week), 3 (1~3 hrs/week), 4 (> 3 hrs/week).

Score is assigned for each category is 0 : 0, 1 : 15, 2 : 45, 3 : 90, 4 : 180

The Mean of score for aerobic exercises has been increased from 117.7 (with standard deviation 115.2) to 166.7 (with standard deviation 116.3). This indicates an improvement of 41.7%, while the p value (0.001) indicates that the change is statistically significant.

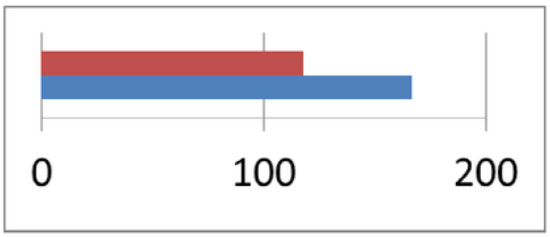

Fig No.16: Mean score of Aerobic Exercise

5.3.3 Self Efficacy:

The score of self-efficacy is calculated by compounding the scores of individual questions related to self-efficacy. The Mean of score for self-efficacy has been increased from 63.9 (with standard deviation 17.2) to 84.4 (with standard deviation 12.5). This indicates an improvement of 32.1%, while the p value (0.00) indicates that the change is statistically significant.

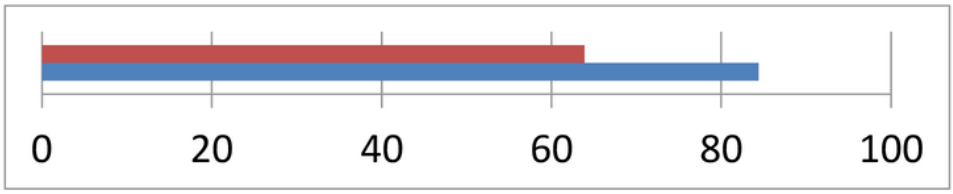

Fig No.17: Mean Score of Self Efficacy

5.3.4 Healthy Eating:

The score of healthy is calculated by question related to healthy eating. The Mean of score for healthy eating has been increased from 4.8 (with standard deviation 1.6) to 7.9 (with standard deviation 1.3). This indicates an improvement of 64.6%, while the p value (0.001) indicates that the change is statistically significant.

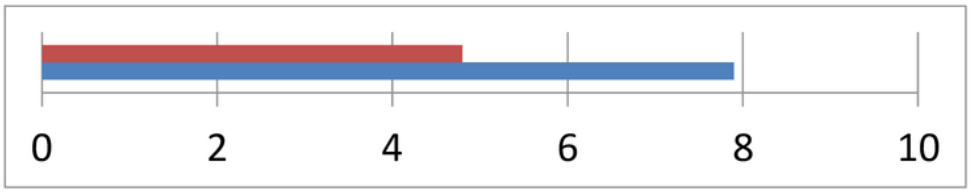

Fig No.18: Mean Score of Healthy Eating

5.3.5 Regular Exercise:

The score of healthy is calculated by question related to healthy eating. The Mean of score for healthy eating has been increased from 5.9 (with standard deviation 2.2.) to 7.2 (with standard deviation 1.4). This indicates an improvement of 22.0%, while the p value (0.00) indicates that the change is statistically significant.

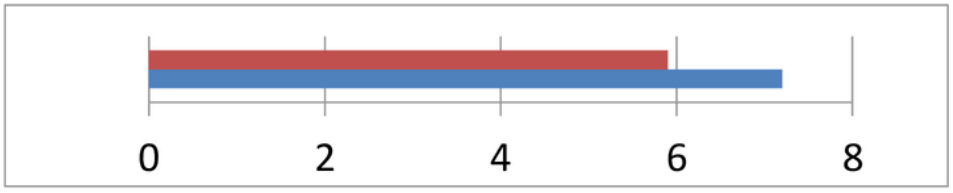

Fig No.19: Mean Score of Regular Exercise

Discussion

6.0 This section has been described as under: -

6.1 Improvement in HbA1c value from baseline to post intervention.
6.2. Improvement in Lipid profile (LDL, HDL and total cholesterol) from baseline to post intervention
6.3. Improvement in BMI from baseline to post intervention.
6.4 Improvement in Blood pressure from baseline to post intervention.
654 Comparison with other studies.

In this study, we assessed the impact of a Lifestyle intervention program incorporating health coaching on clinical outcomes and healthy lifestyle behaviors among corporate employees with diabetes, hypertension or having both.
We hypothesize that patients in the with health coaching intervention will show significant improvements in the clinical indicators pertinent to diabetes, hypertension or both (HbA1c, LDL, HDL, Total cholesterol and blood pressure) and behavioural indicators including self-care activities and self-efficacy. We observed a statistically significant increase in these respective outcomes in a span of six month of the program.

The mean for HbA1c decreased at population level from 6.96 (SD1.63) to 6.37 (SD1.18) with a p value of 0.00. In diabetics particularly the decrease is from 8.17 (SD1.22) to 7.42 (SD1.16) with a p value of 0.00.
In Prediabetics particularly the improvement is with HbA1c value decrease from 6.12 (SD1.74) to 5.69(SD1.32).
The following table indicates the changes in the meaure pre and post the intervention:

Stage	Baseline HbA1c	At sixth month HbA1c
Diabetics	8.17 (SD1.22)	7.42(SD1.16)
Prediabetic	6.12 (SD1.74)	5.69(SD1.32)

Table No.4: % improvement in HbA1 values

It indicates that there was a statistically significant inprovement in HbA1c values with improvement in diabetic and prediabetic both. It becomes imperative to control the blood sugar specifically if a person is in prediabetic stage as if not cared he or she will turn soon to diabetic stage.

Stage	% improvement in HbA1c
Diabetics	9.4%
Prediabetic	7.1%

Table No.5: % improvement in HbA1 values

The following table indicated the significant improvement in the Lipid profile:

Stage	% improvement
LDL	15.2 %
HDL	17.8 %
Total Cholestrol	9.2%

Table No.6: % improvement in Lipid profile

Stage	% improvement
Systolic BP	3.9%
Diastolic BP	1.5%

Table No.7: % improvement in Lipid profile

This study also indiactes that there is significant improvement in all the behavioural indiactors as shown in the table below:

	% Improvement
Stretching or strengthening exercises	83.3 %
Aerobic Exercise	41.7 %
Self-Efficacy	32.1 %
Healthy eating	10.7 %
Regular Exercise	22.0 %

Table No.8: % improvement in Behavioural outcomes

As shown in the table there is maximum improvement in stretching exercise behaviour (83.3 %) which is an imperative change as the participants are the corporate employees who are tend to engage in a sedentary lifestyle due to their long job hours. Health coaching has been able to change their exercise behaviour drastically. As for Aerobic Exercise there is 41.7% improvement and for regular exercise 22% improvement which statistically significant. This improvement in physical activity behavior of the participants suggests that health coaches have been able to positively influence the participants.

In our study there is significant improvement in self-efficacy. Hence after the intervention the Participant have been able to make confident choices to control their health and also they have been able achieve their goals.

Studies from many parts of the world have suggested improvements in people's confidence in making changes following health coaching[19,20,21,22,23,24]. Health coaching has also been found to improve the self-efficacy of people caring for someone with a long-term condition or other health issue[25,26,27]. But not all evidence about self-efficacy is positive[28]. Some

trials have found that changes in self-efficacy and feelings of anxiety are mixed and may be short-term[29].

Some randomised trials and other studies report that health coaching can support people to change a wide range of behaviours, including increasing physical activity[30,31,32] improving diet[33,34,35,36] improving lifestyle[37] reducing smoking[38,39,40] seeing health professionals more regularly or appropriately[41] communicating with professionals[42] or family members[43] medication adherence[44,45] and undertaking other self-care behaviours[46,47,48].

A number of individual studies have reported improved clinical indicators[49,50] such as better blood sugar control for people with diabetes[51,52,53] improved blood pressure[54,55] reduced cholesterol[56,57] reduced cardiovascular or lifestyle risks[58] reduced pain and weight loss or reduced body mass index[59]. Although some of these studies objectively measure outcomes, others rely on self-report[60]. It is also true that some of the improvements are modest. Not all findings are positive.

7.0 Conclusion:

In our study, it is evident that health coaching has significantly improved the clinical and behavioral outcome in the vulnerable population. It also led to significant improvement in self-reported behaviors of physical activity and healthy diet or eating choices. Similar trends were also observed with self-efficacy measures.

Self-management care or training and support is an effective component of management or care for people having diabetes. Due to a limited time and resources, the essential support is not continuously delivered in most health care settings. The results suggest that the integration of health coaching in individuals at high risk for diabetes is feasible and may be useful as part of lifestyle management strategies in target populations. Future randomized clinical trials are needed to further explore this issue.

8.0 Recommendations:

The present study findings and the outcome of various parameters has led to a set of recommendations. The suggested recommendations are given in succeeding paragraphs.

Collaborative partnerships: Corporates to engage in evidence based lifestyle management program focusing the target population. Insurance companies should engage to foster collaborative partnership with the other organizations.

Bridging the gap: Health coaching act as a bridge between clinician and patient, hospitals should involve health coaches into their teams. It will help the patient in his overall health care plan as the physician might not have time to supervise his overall journey as here the health coach helps a patient guide throughout his journey.

Community engagement: Health coaching should be facilitated on community level by training the workers for targeted population for specific diseases.

Bridging the gap: Health coaching should be facilitated on national level by providing provision of certificate courses. This will not only add asset to the patient healthcare team but also will provide health professional employment opportunities as well.

ANNEXURE

Informed Consent Form

[Project Title: An Impact evaluation of a Lifestyle management program in a Multinational corporation setting- A quasi experimental study]

Name of investigator and institution:

Contact Details:

Name of sponsor: Apollo Munich Health Insurance

This Informed Consent Form has two parts:

- **Information Sheet (to share information about the research with you)**
- **Certificate of Consent (for signatures if you agree to take part)**

PART I: Information Sheet

Introduction

You are invited to participate in a research study that we are conducting to evaluate impact of an intervention on Lifestyle diseases and risk factors of the same, which are very common in India. We will provide you information and would like to invite you to be part of this research.

It is important that you understand why the research is being done and what it will involve. Please take your time to read through and consider this information carefully before you decide if you are willing to participate. Ask the study staff if anything is unclear or if you'd like more information. After you are properly satisfied that you understand this study, and that you wish to participate, you must sign this informed consent form.

Purpose of the research

The purpose of this study is to establish the effectiveness a Lifestyle management program on improving or preventing the lifestyle diseases like Diabetes, Heart diseases etc. Lifestyle diseases are preventable, as early life decisions and influences can impact people later on in life. Physical inactivity, poor diet, as well as tobacco and alcohol use are the leading modifiable behavioral risk factors in the development of obesity, hypertension, and high levels of glucose and fat in the blood, which are the leading causes of chronic diseases worldwide. The reason we are doing this research is to find out the impact of lifestyle intervention program (Health coaching) on Blood sugar level, BMI, Blood pressure, cholesterol and dietary & physical activity behaviours, disease or events, and also to assess the impact on claims cost or healthcare cost incurred by the employees.

Type of Research Intervention

The research involves two times (at start and at the end) Blood sample collection, telephonic health coaching for six months.

Participant selection

We will be including the diabetic and hypertensive in our study and since you have been identified in our routine claims analysis to be having one of these, it would provide an opportunity to you to be the part of our intervention.

Voluntary Participation

Your participation in this study is voluntary. You do not have to be in this study if you do not want to. You may also refuse to answer any questions you do not want to answer. If you volunteer to be in this study, you may withdraw from it at any time.

If you withdraw, any data collected from you up to your withdrawal will still be used for the study. Your refusal to participate or withdrawal will not affect any medical or health benefits to which you are otherwise entitled.

Procedures and Protocol

We will measure your blood pressure with digital Blood Pressure machine. We will take about 6 ml of blood from your arm using a syringe and needle. We will take about blood two times (one at 1st

month and second at the end of the program. At the end of the research, any left over blood sample will be destroyed.

The blood samples obtained during this research procedure will be used only for this research, and will be destroyed when the research is completed.

Description of the Process

During the research you will be visited by lab staff for Blood Pressure measurement and blood sample collection and then will be provided with health coaching and later same measurement will be done after six months.

- In the first visit, a small amount of blood, equal to about a teaspoon, will be taken from your arm with a syringe. This blood will be tested for Blood sugar, Cholesterol. We will also ask you a few questions about your general health and measure your BP and also measure how tall you are and how much you weigh.

- Once the BP is measured and Blood sample is collected, a welcome call will be made by Health coach (certified and trained dietician) to each participant and for six months each month two calls will be made which will include goal setting, Barrier identification; counselling for physical activity, diet and drug compliance.

- At the end of the program, you will be visited again by lab staff for Blood Pressure measurement and blood sample collection to check for the changes.

Duration

The research takes place over six months in total. During that time, it will be necessary for you to be visited by lab staff during first and last month of the program and to receive two calls by health coach each month as per your desired time schedule. At the end of six months, the research will be finished.

Benefits

If you participate in this research, you will have the following benefits: Awareness of current health status (via Reports). There will be continuous support and monitoring of health behaviour by health coaching. If successful this intervention will help in improving the health status and decrease the health care cost inculcated and it will also help in self-management of the risk factors.

Confidentiality

With this research, something out of the ordinary is being done in your community. It is possible that if others in the community are aware that you are participating, they may ask you questions. We will not be sharing the identity of those participating in the research.

The information that we collect from this research project will be kept confidential. Information about you that will be collected during the research will be put away and no-one but the researchers will be able to see it. Any information about you will be kept confidential. It will not be shared with or given to anyone except [Lab partner (Non-disclosure agreement will be signed for the same)].

Sharing the Results

The knowledge that we get from doing this research will be shared with you through individual reports. Confidential information will not be shared.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so. You may also stop participating in the research at any time you choose. It is your choice and all of your rights will still be respected.

Who to Contact

If you have any questions you may ask them now or later, even after the study has started. If you wish to ask questions later, you may contact any of the following:

Dr Laxmi Verma

Apollo Munich Health Insurance, Udhyog Vihar Phase 3, Gurgaon Haryana

Phn No. : 0124-4584-553

Email : Laxmi.verma@apollomunichinsurance.com

This proposal has been reviewed and approved by [Legal and ethical department of Apollo Munich Health Insurance], which is a committee whose task it is to make sure that research participants are protected from harm.

You can ask me any more questions about any part of the research study, if you wish to. Do you have any questions?

PART II: Certificate of Consent

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.

Name of Participant_____

Signature of Participant _____

Date _____

Day/month/year

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that the following will be done:

1.

2.

3.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Name of Researcher/person taking the consent_____

Signature of Researcher /person taking the consent_____

Date _____

Day/month/year

Study Tool:

EXERCISE BEHAVIORS

During the past week, even if it was not a typical week for you, how much **total** time (for the **entire week**) did you spend on each of the following? *(Please check **one** box/number for each question.)*

	None	Less than 30 min/wk	30-60 min/wk	1-3 hrs per week	More than 3 hrs per week
1. Stretching or strengthening exercises (range of motion, using weights, etc.)	0	1	2	3	4
2. Walk for exercise	0	1	2	3	4
3. Swimming or aquatic exercise	0	1	2	3	4
4. Bicycling (including stationary exercise bikes)	0	1	2	3	4
5. Other aerobic exercise equipment (Stairmaster, rowing, skiing machine, etc.)	0	1	2	3	4

	None	Less than 30 min/wk	30-60 min/wk	1-3 hrs per week	More than 3 hrs per week
6. Other aerobic exercise	0	1	2	3	4
6a. Please specify:					

CURRENT HEALTH BEHAVIORS

7. How confident do you feel in your ability to regularly make healthy eating choices?

Not at all Confident				**Somewhat Confident**				**Very Confident**
1	2	3	4	5	6	7	8	9

8. How confident do you feel in your ability to exercise regularly?

Not at all Confident				**Somewhat Confident**				**Very Confident**
1	2	3	4	5	6	7	8	9

9. Over the past week, how successful have you been in making healthy eating choices for your meals and snacks? *(**Circle** the number that best describes you **over the past week**)*

Not at all successful (*did not make healthy eating choices about half the time*)			**Somewhat successful** (*made healthy eating choices about half the time*)				**Very successful** (*made healthy eating choices every meal*)	
1	2	3	4	5	6	7	8	9

10. During a typical **7-Day period** (a week), in your leisure time, how often do you engage in any regular activity **long enough to work up a sweat** (heart beats rapidly)? *(**Circle** one number below)*

Often	Sometimes	Never/rarely
1	2	3

SELF EFFICACY

11. I am confident I can have a positive effect on my health.

Disagree very much				Agree very much
0	1	2	3	4

12. I have set some definite goals to improve my health.

Disagree very much				Agree very much
0	1	2	3	4

13. I have been able to meet the goals I set for myself to improve my health.

Disagree very much				Agree very much
0	1	2	3	4

14. I am actively working to improve my health.

Disagree very much				Agree very much
0	1	2	3	4

15. I feel that I am in control of how and what I learn about my health.

Disagree very much				Agree very much
0	1	2	3	4

TOBACCO CONSUMPTION

Do you currently smoke tobacco on a daily basis, less than daily or not at all?

HEALTH COACHING PROGRAM FEEDBACK

*After finishing of program.

Please circle the one number (0-10) best reflecting your response to the following that describes your opinion of the program.

To what extent did participation in health coaching?

Q1. Changed you/your behavior

Not at all										Very much
0	1	2	3	4	5	6	7	8	9	10

Q2. Helped create a personal vision of wellness

Not at all										Very much
0	1	2	3	4	5	6	7	8	9	10

Q3. Increase your confidence to take steps to greater wellness

Not at all										Very much
0	1	2	3	4	5	6	7	8	9	10

Q4. Increase your motivation to take steps to greater wellness

Not at all										Very much
0	1	2	3	4	5	6	7	8	9	10

Q5. Increase your use of goal setting skills

Not at all										Very much
0	1	2	3	4	5	6	7	8	9	10

Q6. Help get you back on track after running into barriers

Not at all										Very much
0	1	2	3	4	5	6	7	8	9	10

Q7. Help you achieve greater wellness

Not at all										Very much
0	1	2	3	4	5	6	7	8	9	10

Q8. What Was Most Helpful About Participating in Health and Wellness Coaching in the Primary Care Setting

Ans……

Q9. What Was least Helpful About Participating in Health and Wellness Coaching in the Primary Care Setting

Ans……

Do you have any suggestion for future programs? If yes please provide

……..

----------Thank You----------

laxmi Verma

ORIGINALITY REPORT

12%	6%	6%	5%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Ramona S. DeJesus, Matthew M. Clark, Lila J. Finney Rutten, Robert M. Jacobson et al. "Impact of a 12-week wellness coaching on self-care behaviors among primary care adult patients with prediabetes", Preventive Medicine Reports, 2018 Publication	5%
2	coast.noaa.gov Internet Source	4%
3	Submitted to Lal Bahadur Shastri National Academy of Administration of Management Student Paper	2%
4	"Abstracts of 52nd EASD Annual Meeting", Diabetologia, 2016 Publication	2%

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		