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The Effect of health coach program on diabetes patient in the primary health care clinic in Saudi Arabia

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Abstract

Research objective: aim in this study is to evaluate the effectiveness of the Health Couch program on diabetes patient In the primary health care clinic in the Kingdom of Saudi Arabia during 2021. The research also aims to clarify the factors and variables that affect the health of diabetic patients.

Methodology: The researcher used th Cross-sectional study.Where A cross-sectional study is a type of observational study, or descriptive research, that involves analyzing information about a population at a specific point in time. Typically, these studies are used to measure the prevalence of health outcomes and describe characteristics of a population

study population and samling: Patients with Diabetes mellitus in Saudi Arabia. The study population consisted of the five regions of the Kingdom of Saudi Arabia, namely, the northern region, represented in the city of Tabuk, and the sample size was 4081 patients

Results: Through the results of the statistical analysis and discussion of the results, the researcher found that: The effict of health coach program on diabetes patient in the primary health care clinic in Riyadh, Saudi Arabia It has positive results and improves the level of health of patients through the standards (BMI Average - gender - Age Average - Hba1c). The patients did not convert from type 2 diabetes to the first type for the study sample, to the coach's response to the disease and the patients' attendance of sessions of various types such as direct attendance or through other means of communication.

Keywords: health coach program - diabetes - primary health care clinic.



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Introduction

A rising worldwide health problem is diabetes mellitus (DM). Around the world, an estimated 171 million people had Diabetes in 2000; by 2011, that figure had risen to more than 366 million, and by 2030, the number is projected to reach more than 552 million [1]. Diabetes mellitus (DM) is a metabolic disorder with numerous etiologies that is characterized by hyperglycemia brought on by abnormalities in insulin production, insulin action, or both and linked to disturbances in the metabolism of carbohydrates, fats, and proteins [2,3].

Due to the region's fast economic development, urbanization, and changes in lifestyle behaviors, it is expected that the Middle East and North Africa would have the greatest incidence of Diabetes [1]. Diabetes is the most difficult health issue facing the Kingdom of Saudi Arabia (KSA), which is not excluded from the worldwide pandemic [4] [5]. Approximately 0.9 million individuals were diagnosed with Diabetes in 1992, according to a study by the Saudi Arabian Ministry of Health. Still, this number increased to 2.5 million in 2010, or a 2.7-fold rise in incidence rates in less than two decades. Four thousand six hundred sixty diabetic patients visited family and medical clinics in Saudi Arabia in 2015 [6].

Coaching for health and wellness is a new approach to avoiding and managing chronic diseases. Health and wellness coaching (HWC) employs a patient-centered methodology to induce a long-lasting, sustainable lifestyle change [7]. One such program, Mastering Diabetes (MD), encourages a low-fat, plant-based, whole-food diet by employing recorded online education, daily support via personal online discussion boards, and live interactive coaching from the MD coaching team. MD's stated objectives are to teach people with all types of Diabetes—including type 1, type 1.5, Pre-DB, type 2, and gestational diabetes—how to use a low-fat, plant-based, whole-food diet to reverse insulin resistance, lower blood pressure, lower levels of triglycerides



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and low-density lipoprotein cholesterol, as well as lower levels of fasting blood glucose and glycosylated hemoglobin (HbA1c) [8].

Health education and awareness are the most efficient means of informing the public and motivating them to live healthy lives. Adopting a healthy lifestyle lowers the likelihood of developing illnesses and the risk of complications brought on by these illnesses [9]. The patient education strategy, in particular, can be inexpensive and successful in raising patient satisfaction levels, subsequently raising the general health condition of the populace [10].

Studies found inadequate access and low efficacy of health education in PHC generally, according to a thorough study of the quality of primary health care PHC centers in Saudi Arabia [11, 12]. Additionally, health educators had a special need because just 8% of the nation's centers have the necessary staff [13].

Study rationale

There is a lack of data on health coaching Effectiveness with the DM management across health coaching . Typically, a specialized team designs health coach printed materials, posters, or movies for this problem that incorporate illustrations and easily understandable text for the visitors to the various health clinics. Therefore, the current study seeks to evaluate the Effectiveness of health coaching on DM patients in Saudi Arabia.

Aim of the study

Our aim in this study is to evaluate the effectiveness of the Health Couch program on diabetes patient In the primary health care clinic in the Kingdom of Saudi Arabia during 2021.

The research also aims to clarify the factors and variables that affect the health of diabetic patients, and this research also aims to shed light on the importance of the exercises provided by the coach in maintaining physical and healthy activity for type 1 and type 2 diabetes.



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The research also aims to clarify the important role played by the coach for patients, especially in remote areas.

Study objectives

The importance of the research is divided into practical importance and theoretical importance.

Practical importance

The practical importance is represented in the following points:

- To evaluate the satisfaction of DM patients with health coaching for Diabetes in Saudi Arabia.
- To study the effectiveness of health coaching programs for Diabetes.
- To analyze the effectiveness of health coaching programs for Diabetes.
- Theoretical importance

The theoretical importance is represented in the following points:

- Clarify the curriculum and the scientific role of the importance of the coach.
- Clarifying the relationships and the explanatory variables of the variables affecting diabetes and the role of the scientific coach in reducing the adverse effect of factor.

Review of literature

Health coaching is a promising approach for assisting patients in changing their behavior to prevent or treat Diabetes and other chronic conditions [13]. Health coaching enhances patients' commitment to a lifestyle change by utilizing strategies like motivational interviewing, frequently provided via one-on-one telephone consultations with non-physician clinicians [14]. In addition, health coaching enhances behaviors related to diet, weight management, and medication adherence by focusing on goal-setting and better collaboration with healthcare professionals [15].



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Coventry et al. (2019) assessed the effectiveness of a telephone health coaching intervention for non-diabetic hyperglycemia (NDH) patients. The digital and telephone coaching intervention was given to 106 individuals with NDH, whereas the telephone coaching only intervention was given to 103 people with NDH. In an intention-to-treat analysis, individuals assigned to the digital and telephone coaching intervention reported higher satisfaction levels than those assigned to the telephone-only intervention. However, the difference was not statistically significant. On secondary outcomes, there were no notable differences between the groups (HbA1c, BMI, activation, depression, self-management, health status). The findings demonstrate that in regularly distributed diabetes preventive programs, user satisfaction with digitally enabled treatments is similar to that of telephone-provided interventions. [16]

Patients' satisfaction with health education services in primary health care centers in Riyadh was assessed in a Saudi study by Asiri et al. (2013). 68% of people expressed overall satisfaction with health education services. The most recommended way to deliver health education was a one-to-one clinic. The majority of participants selected doctors to be their source of health information. The study's findings revealed that the participants gave the various aspects of the health education services they received a favorable review. [17]

In a voluntary telephone coaching program at a major integrated health care delivery system in northern California, a study from 2011 by Adams et al. investigated patient satisfaction, patients' reported success in accomplishing program goals, and the patient-level correlates of these outcomes. The number of completed sessions and patient activation were both positively and significantly associated with the satisfaction and perceived success with the telephone health coaching offered by a health plan. Most participants who had attended two or more sessions said they were happy (70%) or indifferent (20%) with the program, and 71% said they would suggest health coaching. The three most often brought up subjects where maintaining a healthy weight, eating well, and exercising (88%). [18]

The effectiveness of an online diabetic health coaching program was evaluated in a study by Sarver et al. (2021). The study showed that those who participated in an online health and wellness coaching program improved their weight and HbA1c. Most respondents (78.4%)



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reported losing weight, 68.8% reported lowering their HbA1c, 52.4% reported using fewer medications, 86.8% reported continuing to improve their health after participating in MD, and 83.5% thought the online program was very useful. [19]. Most patients who received health education at their primary health clinic in Saudi Arabia (PHC) were satisfied according to a patient satisfaction study with health education services. In primary health care in Riyadh .[20]

In a study conducted on the satisfaction of the beneficiaries of the health coach program, it was found that the level of beneficiaries' satisfaction is positively correlated with the number of successful sessions. The beneficiary is satisfied when he sees the goals achieved from the sessions [21].

Diabetes mellitus (DM), characterized by chronic hyperglycemia is a major global health problem emerging in developing countries.1 Diabetes Mellitus (DM) is a global epidemic in this millennium. The highest increase in Diabetes Mellitus prevalence is amongst low and middleincome countries. According to WHO, 80% of diabetes deaths occur in low and middle income countries.2 Non-communicable diseases (NCDs) are the leading cause of death globally and diabetes mellitus is the 4th main contributor.3 According to the World Health Organization (WHO) Regional Office for Africa, non-communicable diseases including DM, will increase so rapidly in Sub-Saharan Africa (SSA) as an epidemic by year 2020.4 The global burden of diabetes mellitus is enormous and glaring. The impact on health and economy is substantial, yet this disease is assuming an epidemic proportion worldwide, with its global prevalence estimated at about 366 million today, and 552 million by 2030.5 Emerging trend of diabetes mellitus (DM) is observed worldwide, as by 2025, its prevalence is projected to be 6.3%, which is a 24.0% increase compared with 2003. There will be 333 million (a 72.0% increase) diabetics by 2030 in individuals of 20 to 79 years of age. The developing world (mainly central Asia and Sub-Saharan Africa) accounted for 141 million people with diabetes (72.5% of the world total) in 2003.6 The number of people (aged 20-79 years) with diabetes mellitus (diabetes) worldwide is projected to increase from 382 million in 2013 to 592 million in 2035.7

The prevalence of diabetes is rapidly rising globally. World Health Organization (WHO) reports show that 32 million people had diabetes in the year 2000.8 The number of people with diabetes



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is increasing due to population growth, aging, urbanization, and increasing prevalence of obesity and physical inactivity.9 In Africa, diabetes mellitus is estimated to affect around 14 million individuals and this is expected to rise to about 28 million by 2030. The rise has been attributed to lack of physical activity, high carbohydrate intake and ageing populations. Importantly, there is an increase in the prevalence in obesity—an important risk factor for type 2 diabetes—in Africa.10.

Prevalence of DM differs from country to country. The prevalence of diabetes in Nigeria was 3.25%.7 In Tanzania the overall prevalence of T2DM in adults was 11.9%.11 The prevalence of DM in Bangladesh was 12.3%.12 In Vietnamese adults was 5.9%.13 In India the prevalence in adults was 12.4%.14 In China was 5.9%.15 The overall prevalence of DM among population in Jazan was found to be 12.3%.16.

Diabetes mellitus in Sudan: Several studies have indicated that, the prevalence of DM in Sudan with increasing rates. A house hold survey was carried out in Sudan showed that, the prevalence of diabetes in Sudan is rising from 9.3% in 2010 to 10.6 % in 2013.17 Other study carried out in four states in Sudan, showed the prevalence of diabetes in rural population was 11.2%.

Diabetes is the fifth leading cause of death in Taiwan; with a prevalence of 11.8% in the adult population, but this figure has been rising and is expected to continue to increase (2). What's more, the cost of dialysis is the highest in Taiwan's national medical expenditure, with more than half resulting from the uncontrolled diabetes. In 1997, Taiwan established the "Diabetes Shared Care Network," which integrated nationwide medical institutions and adjusted health insurance payments for diabetes care (3). After the patients are recruited and joined the diabetes shared care network, they can use a certain number of free services among participating institutions e.g., health education, blood sugar, blood pressure, and blood lipids test, and foot and eye check every year. As the size of the aging population is growing, the prevalence of diabetes is on the rise, so the disease is likely to continue to cause medical and economic burdens. In preventing and treating of diabetes, promoting a healthy lifestyle is an eminent part. However, lifestyle change counseling is seldom applied in diabetes prevention and treatment system. Hence, this kind of studies might be crucial for future application possibilities.



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In recent decades, health and wellness coaching has become a new technique used in the care and management of chronic diseases around the world. Health coaching is a patient-centered, patient-decided approach to disease management (4). Although there are no gold standards for the definition of health coaches, standardized training methods and intensity, and intervention methods, some system-review and meta-analysis literature found health coaching intervention had positive effect on type 2 diabetes management (5–7). In many studies, after participation in health coach intervention, most diabetes patients achieved positive results, such as lowered levels of hemoglobin A1c (HbA1c) and decreased body mass index (BMI) (8–20). Health coaching also improves patients' self-efficacy of diabetes self-management and healthy lifestyle (7, 21–26). Therefore, it is in our interest to carry out tests where no health coach clinical studies have been conducted and to explore its practicability and effectiveness in Taiwan.

In this paper, we designed a quasi-experimental test to evaluate the effect of a health coach intervention on diabetes patients' blood sugar management and self-efficacy by a certified coach. The aim of this study was to enhance patients' self-efficacy in diabetes care, including medical compliance and health behavior, and to improve the indicators of diabetes, especially the value of HbA1c.

Methods:

• Study design:

The researcher used th Cross-sectional study.Where A cross-sectional study is a type of observational study, or descriptive research, that involves analyzing information about a population at a specific point in time. Typically, these studies are used to measure the prevalence of health outcomes and describe characteristics of a population.

• Study population:

Patients with Diabetes mellitus in Saudi Arabia. The study population consisted of the five regions of the Kingdom of Saudi Arabia, namely, the northern region, represented in the city of Tabuk, and the sample size was 4081 patients, and the southern region was represented in the city of Asir, and the population consisted of 4,000 patients, and the western region was represented in the city of Taif, and the population consisted of 3843



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patients. The eastern region was represented in the city of Hafr Al-Batin, and the population consisted of 1,132 patients, and the central region was represented in the city of Riyadh, where the population consisted of 53 patients

• Participant's age:

The study population consisted of different age groups because diabetes is not limited to a specific age group of both sexes, males and females, as the ages ranged from one year to 60 years of age and more.

• Study groups:

One group of patients in Saudi Arabia have taken 6 cotch meeting for traing

• Sample size:

Due to the difficult circumstances at times, such as lack of time, for example, and the large number of costs and difficult efforts required to choose a simple random sample, we conduct the process of selecting the sample in multiple and successive stages, thus . The sudy sample by using simple random sample selection with 5% marginal of error and 95% level of confedence the reasrcher take sample (1442) Patients. Was taken from the regions:North (Tabuk- 408 pateints) - south (Aseer- 400 pateints) – west (Altaif- 384 pateints) – Est (Hafer Albatin- 113 pateints) – Middle (Riyadh-56 pateints)

• Program description:

Health Coach Program:

Health and wellness coaches work with clients to improve their health, vitality, and wellbeing by engaging in behaviors that have been proven to improve health and prevent disease including weight loss, fitness, nutrition, stress coping, sleep, mind-body and positive psychology interventions.

People tend to hire health coaches to help them with a broad variety of health issues, such as weight loss, stress reduction, the management of chronic conditions, improving diet and



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exercise, tobacco cessation, addiction, and adjusting to a life-altering health event, like a heart attack.

The modalities included online and telephone trainer sessions in addition to attending by appointment at the health trainer clinic in primary health care centers.

The health coaching program used evidence-based behavior change strategies to encourage

Skills development, self-monitoring, and goal setting/achievement. The patient's goals are determined through his involvement in building the plan

Data are collected in each session such as (demoghrafic-cumulative sugar rate - blood pressure measurement - body mass index - number of hours of exercise per day - number of healthy meals per day - number of hours of sleep - number of glasses of water drinking - smoking)

Then the results are measured by analyzing the improvement data from the health coach sessions to reach a healthy lifestyle.

Procedure:

Patients are transferred from doctors to the health coach, then the health coach determines with the patient the type of session and the number of targeted sessions by following the five steps (assessment - planning - implementation - evaluation - dcumentation).

Study Tools:

Data were systematically retrieved using secondary data generated by the study investigators with their objectives. Data were collected using a pre-designed electronic sheet.

Ethical consideration:

Confidentiality will be assured to all participants who agreed to participate in the study. In addition, the respondents will be given a brief description of the study and its objectives.



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Statistical Analysis:

- SPSS version 25 will be used to analyze the data. Data will be cross-tabulated, and frequencies will be approximated.
- Descriptive statistics

Descriptive statistics is a brief description of a large set of data or a set of methods used to facilitate the quantitative description of the main characteristics of the data, using tables and graphs to facilitate understanding for the user.

• Chi square test

A Chi-square test is a hypothesis testing method. Two common Chi-square tests involve checking if observed frequencies in one or more categories match expected frequencies.

• Correlation

The correlation coefficient is a statistical measure that measures the degree of relationship between two variables. The higher the value of the correlation, the stronger the relationship, and the smaller the relationship, the weaker the relationship. Its value ranges between one and zero and the correlation may be direct or inverse.

- The w2-test will analyze case referrals connected to the participating physicians' knowledge level and background, with a 5% significance and 95% confidence interval.
- Level of confidence

With a 95 percent confidence interval, have a 5 percent chance of being wrong. With a 90 percent confidence interval, you have a 10 percent chance of being wrong. A 99 percent confidence interval would be wider than a 95 percent confidence interval.



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Results

A total of 1442 participants peoples were participated in this study selected by using statistical tables. Socio demographic characteristics of sampling show in (Table 1).

Variable	Frequency	%		
Study group Size	1442	100		
Sex				
Male	476	33		
Female	966	67		
Age group				
0 - 20	21	1.5		
20 - 40	193	13.4		
40 -60	734	50.9		
> 60	494 34			
Occupation	Occupation			
Student	111	7.7		
Unemployee	987	68.4		
Penssionest	152	10.5		
Employee	192	13.3		

Table 1: Socio-demographic characteristics of the study participants

67% (966) of participants were females while 33% males. Most of participants in age group (0 - 20) years (1.5%) followed by 20-40 years of age group (13.4%), 40 - 60 years of age group (50.9%) and above sixty of age (34.3%). 7.7% of participants were Student while 68.4% of them Unemployee. Out of 987 participants 152 (10.5%) are Penssionest and 192 (13.3) are Employee.



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Table 2: Is the reference obese?

Obesity	Frequency	Percent
YES	525	36.4
NO	917	63.6
Total	1442	100.0

Through the results of the above table, foundthat the number of study members who suffer from obesity equals 525 participants, or 36.4%, and we also find that the study sample members who do not suffer from obesity equals 917, with a rate equal to 63.6%, as shown in Figure (2)



Figure (1) Is the reference obese?

Table 3. Does the reference suffer from diabetes?

Diabetes	Frequency	Percent	
NO	439	30.4	
YES	1003	69.6	



Through the results of the above table, foundthat the number of the study sample individuals with diabetes is equal to 1003 with a rate equivalent to 69.6%, which indicates that the highest percentage of the study sample are those with diabetes, and 439 of the study sample do not suffer from diabetes, with a rate of 30.4%. This is as shown in Figure 3.



Figure(2). Does the reference suffer from diabetes?

Table 4. Diabetes type?

Diabetes type	Frequency	Percent
Type1	809	56.1
Type2	631	43.8
Pregnancy diabetes	2	.1
Total	1442	100.0

Through the above table, foundthat 809 and 56.1 of the study sample have type 1 diabetes, and



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in contrast, 631 and 43.8 of the study sample suffer from type 2 diabetes, and there is a small percentage of pregnant women who have diabetes. As positioned in Figure 4.



Figure 4. Diabetes type

Comparison between the last session and the first session

In this part of the research, a comparison was made between the first and last session, where the chi-square test was used to find out the differences between the two sessions

		First session	Last session	Chi Square Value	P-Value
BMI Av	/erage	32.5	26.5	2.578	0.000*
BMI	Male	31.5	25.4	3.546	0.001
	Female	30.4	26.4	2.88	0.000
Age Average		44	44	0.771	0.225
Hba1c		7.2	4.5	2.54	0.002



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Through the above table, found that the average body mass in the first session was very high, reaching 32.5, while in the last apparent, found that the average body mass decreased to 26.5, which indicates that the sessions led to an improvement in the ideal weight for diabetics among the study sample members. We also find that The value of chi-square at the level of significance 0.05 is equal to 0.000, which is a value (less than zero), which leads to the existence of statistically significant differences, and the result indicates that the clarity in the second session improved in relation to the body mass of patients.

When dividing the body mass according to gender, found that the average body mass for males is higher than for women in the first session and equals 31.5 for males and equals 3.4 for females. We also find that the average body mass for males and females in the last session decreased, where foundit in males equal to 25.4 and in females equal to 26.4 and km in the ideal weight We also find that the value of the chi-square at the level of significance 0.05 is equal to 0.001, which is a value (less than zero), which leads to the fact that the value of the chi-square at the level of significance is 0.05 equals 0.001, which is a value (less than zero), which leads to the existence of statistically significant differences. The clarity in the second session improved in relation to the body mass of the female patients. We also find that the average age of the study sample, males and females, did not change.

Found that the cumulative sugar rate Hba1c in the first session was high at 7.2, but with the sessions and training and in the last session, the cumulative sugar rate Hba1c decreased and is equal to 4.5, which leads that the value of chi-square at the level of significance is 0.05 equals 0.002, which is a value (less than zero), which leads to that there is Statistically significant differences, and the result indicates that the clarity in the second session improved in relation to the cumulative glucose rate Hba1c.

The relationship between the number of hours of sleep and drinking water

To measure the relationship between the number of hours of sleep and drinking water, the Pearson correlation coefficient was used, as shown in Table 6.

Table 6. The relationship between the number of hours of sleep and drinking water



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		Number of glasses of	The number of hours
		water per day	of sleep per day
Number of glasses	Pearson	1	.300**
of water per day	Correlation		
	Sig. (2-tailed)		.000
	Ν	1442	1442
The number of	Pearson	.300**	1
hours of sleep per	Correlation		
day	Sig. (2-tailed)	.000	
	Ν	1442	1442
**. Correlation is significant at the 0.01 level (2-tailed).			

Through the results of the above table, we find that the correlation between the number of hours of sleep and drinking water A direct relationship equals 0.30, and this relationship is statistically significant, as the p-value is > 0.05, which means that there is a relationship between the number of hours of sleep and the number of drinking water cup per day. The patient did not suffer from insomnia.

Comparing the number of hours of exercise with smoking

The researcher did not find that there is a statistically significant relationship between number of hours of exercise with smoking. This is because smoking does not affect the number of daily training hours where the the correlation is equal 0.012 and its very poor relation.

The relationship between Body mass index and type of diabetes patient

The researcher found that the value of the correlation coefficient is equal to 0.42, which is a direct relationship indicating that the type of diabetes, is it type I or II, has a relationship with the Body mass index, and we also find that the p-value is equal to 0.000, which indicates that the relationship is significant and statistically significant.



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In order to find out the extent of the relationship between the study sample members who smoke and those with obesity, the researcher found that the relationship is a direct relationship equal to the correlation coefficient of 0.22, which is a weak relationship, and that the values of the statistical significance level equal to 0.547, a value greater than 0.05, which means that there is no statistically significant relationship between smoking and obesity Individuals have the study sample.

On the other hand, the researcher found that there is a correlation between smokers and Hba1c, as the relationship is positive and equal to 0.41, which is a good relationship, as the p-value is equal to 0.001, which is a value less than 0.05, which means that there is a positive, statistically significant relationship between smokers and Hba1c, as the Always a smoker with diabetes, we find that the cumulative blood sugar (Hba1c) is high.

Discussion

In this part of the research, the results that were reached in the above results were discussed, where the researcher found that. Through the results of the above table, foundthat the number of the study sample individuals with diabetes is equal to 1003 with a rate equivalent to 69.6%, which indicates that the highest percentage of the study sample are those with diabetes, and 439 of the study sample do not suffer from diabetes, with a rate of 30.4%. found that the number of the study sample individuals with diabetes is equal to 1003 with a rate equivalent to 69.6%,

The researcher also found that the factors (BMI Average - gender - Age Average - Hba1c) are among the most influential factors in the model and this result is consistent with the study of Abdalla(2017) where he foud that obesity, physical activity, renal problems and pancreatic diseases and Diabetes mellitus positivity. The results show there was statistical association between family history and DM positivity OR 2.19 (95% CI 1.10 - 4.34, p =0.027). The findings show the DM more prevalent among obese than Non-obese, statistically significan. Also this result agreed with Adams 2011. investigated patient satisfaction, patients' reported success in accomplishing program goals, and the patient-level correlates of these outcomes. The number of completed sessions and patient activation were both positively and significantly associated with



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the satisfaction and perceived success with the telephone health coaching offered by a health plan.

Also found that the average body mass in the first session was very high, reaching 32.5, while in the last apparent, found that the average body mass decreased to 26.5, which indicates that the sessions led to an improvement in the ideal weight for diabetics among the study sample members. This result agreed with Coaching for health and wellness is a new approach to avoiding and managing chronic diseases. Health and wellness coaching (HWC) employs a patient-centered methodology to induce a long-lasting, sustainable lifestyle change. Generally, worldwide diabetes prevalence is similar in men and women, but it is shown to be slightly higher in men greater than 60 years of age. Our results show there was no differences between sex and Diabetes mellitus positivity (p > 0.05). This result disagrees with that reported by Ruhembe et al; diabetes was more prevalent in the women of 60 > years group .

The researcher found that the cumulative sugar rate Hba1c in the first session was high at 7.2, but with the sessions and training and in the last session, the cumulative sugar rate Hba1c decreased and is equal to 4.5, which leads that the value of chi-square at the level of significance is 0.05 equals 0.002, which is a value (less than zero), which leads to that there is Statistically significant and this results agreed with study of a Saudi study by Asiri et al. (2013). Patients' satisfaction with health education services in primary health care centers in Riyadh was assessed in 68% of people expressed overall satisfaction with health education services. The most recommended way to deliver health education was a one-to-one clinic.

The result foud that there is correlation between the number of hours of sleep and drinking water A direct relationship equals 0.30, and this relationship is statistically significant, as the p-value is > 0.05, which means that there is a relationship between the number of hours of sleep and the number of drinking water kites per day. The patient did not suffer from insomnia. Tis result agreed with Coventry et al. (2019) assessed the effectiveness of a telephone health coaching intervention for non-diabetic hyperglycemia (NDH) patients. The digital and telephone coaching intervention was given to 106 individuals with NDH, whereas the telephone coaching only intervention was given to 103 people with NDH. In an intention-to-treat analysis, individuals



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assigned to the digital and telephone coaching intervention reported higher satisfaction levels than those assigned to the telephone-only intervention. However, the difference was not statistically significant. On secondary outcomes, there were no notable differences between the groups (HbA1c, BMI, activation, depression, self-management, health status). The findings demonstrate that in regularly distributed diabetes preventive programs.

The researcher did not find that there is a statistically significant relationship between number of hours of exercise with smoking. This is because smoking does not affect the number of daily training hours where the the correlation is equal 0.012 and its very poor relation, this result agreed of study by Sarver et al. (2021). The study showed that those who participated in an online health and wellness coaching program improved their weight and HbA1c. Most respondents (78.4%) reported losing weight, 68.8% reported lowering their HbA1c, 52.4% reported using fewer medications, 86.8% reported continuing to improve their health after participating in MD, and 83.5% thought the online program was very useful. [19]. Most patients who received health education at their primary health clinic in Saudi Arabia (PHC) were satisfied according to a patient satisfaction study with health education services. And also agreed with World Health Organization (WHO) reports show that 32 million people had diabetes in the year 2000.8 The number of people with diabetes is increasing due to population growth, aging, urbanization, and increasing prevalence of obesity and physical inactivity.9 In Africa, diabetes mellitus is estimated to affect around 14 million individuals and this is expected to rise to about 28 million by 2030. The rise has been attributed to lack of physical activity, high carbohydrate intake and ageing populations. Importantly, there is an increase in the prevalence in obesity-an important risk factor for type 2 diabetes—in Africa.

the researcher found that there is a correlation between smokers and Hba1c, as the relationship is positive and equal to 0.41, which is a good relationship, as the p-value is equal to 0.001, which is a value less than 0.05, which means that there is a positive, statistically significant relationship between smokers and Hba1c, as the Always a smoker with diabetes, we find that the cumulative blood sugar (Hba1c) is high. This result agreed with World Health Organization (WHO) reports show that 32 million people had diabetes in the year 2000.8 The number of people with diabetes



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is increasing due to population growth, aging, urbanization, and increasing prevalence of obesity and physical inactivity.9 In Africa, diabetes mellitus is estimated to affect around 14 million individuals.

Conculusion

Through the results of the statistical analysis and discussion of the results, the researcher found that:

- The effict of health coach program on diabetes patient in the primary health care clinic in Riyadh, Saudi Arabia It has positive results and improves the level of health of patients through the standards (BMI Average - gender - Age Average - Hba1c)
- The patients did not convert from type 2 diabetes to the first type for the study sample, to the coach's response to the disease and the patients' attendance of sessions of various types such as direct attendance or through other means of communication.
- The last session made it clear that the coach now has an active role in maintaining patients' commitment to the instructions, as many of the patients' physical functions have improved.
- There is correlation between the number of hours of sleep and drinking water.
- The clarity in the second session improved in relation to the body mass of the female patients.
- smoking does not affect the number of daily training hours where the the correlation is equal 0.012 and its very poor relation.
- type I or II, has a relationship with the Body mass index, and we also find that the p-value is equal to 0.000, which indicates that the relationship is significant and statistically significant.
- there is a correlation between smokers and Hba1c, as the relationship is positive
- that there is no statistically significant relationship between smoking and obesity Individuals have the study sample.



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Recommendations

Through the results of the research, the researcher recommends the following:

- Paying attention to the active role of the coach for diabetic patients of different age groups.
- Providing multiple ways for patients to access training sessions
- Conduct more in-depth research on health coach program on diabetes patient in the primary health care clinic in Riyadh, Saudi Arabia.
- Educating diabetic patients about the importance of following the instructions of the coach.
- The coach must continuously train in order to be in line with the latest training and follow-up programs for patients.
- Patients should realize the importance of following up with the coach and focusing on the health system in nutrition and sports.
- Opening training centers and accrediting the trainer according to the required scientific specializations so that the center is affiliated with the Ministry of Health.
- Paying attention to the diet of patients, especially in cities and rural areas.
- Educating and educating patients about the role and importance of coaching in maintaining their health.

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