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Research Article

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A study to evaluate the effectiveness of self-care training program on physiological, psychosocial, economic parameters and self-care of diabetes, Aurangabad, Maharashtra

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Introduction

In Charaka Samhitham, the concept of diabetes was summed up in a slogan. "Death comes in the form of diabetes for those who are obese, lead sedentary lifestyles, and eat more, especially sweet items," the slogan's meaning is. Diabetes mellitus has been around since 1500 BC. The illness was known to the ancient Egyptians. Sushrutha, the founder of Indian medicine, identified diabetes mellitus approximately 1000 BC. The Aratenees of Cappadocia described the same idea in 200 AD.

The International diabetes federation Diabetes Atlas provides the latest figures, information and projections on the global impact of diabetes.

- **537 million adults** (1 in 10) were living with diabetes in 2021. This number is expected rise to **643 million** by 2030 and **783 million** by 2045.
- Almost **1 in 2 adults (44%)** with diabetes remain undiagnosed (240 million). The majority have type 2 diabetes.
- More than **3 in 4 people with diabetes** live in low and middle-income countries.
- **541 million adults** are at increased risk of developing type 2 diabetes.
- More than **1.2 million children and adolescents** (0-19 years) live with type 1 diabetes
- Diabetes caused **6.7 million deaths** in 2021.
- Diabetes was responsible for at least **$966 billion in health expenditure** in 2021 – 9% of the global total spent on healthcare.
- **1 in 6 live births (21 million)** are affected by high blood glucose (hyperglycaemia) in pregnancy.

The World Health Organization (WHO) highlights three specific dimensions of health - physical, mental and social. Health is also a multifactorial issue. There are numerous factors that influence health, such as hereditary factors, environmental factors, lifestyle, adequate housing, basic sanitation, and socioeconomic conditions such as income, education, availability and quality of health infrastructure, and per capita health expenditure.

Noncommunicable diseases (NCDs) are medical conditions or illnesses that are not contagious or communicable. NCDs can refer to chronic diseases that persist over long periods of time and progress slowly. The most common causes of noncommunicable diseases include tobacco use (smoking), alcohol abuse, poor diet (high consumption of sugar, salt, saturated fat, and Trans fat), and physical inactivity, which are also referred to as lifestyle diseases because most of these diseases are preventable.

In the past, many non-communicable diseases were associated with economic development and referred to as the "disease of the rich." However, the burden of noncommunicable diseases in the developing world has increased, with an estimated 80 percent of the four major types of NCDs-cardiovascular disease, diabetes, cancer, and chronic respiratory disease-now occurring in low- and middle-income countries 15, NCDs threaten progress toward the Millennium Development Goals UN.

Poverty is closely linked to NCDs. The rapid increase in NCDs is likely to hamper poverty reduction initiatives in low-income countries, particularly through the rising cost to households of health care. Vulnerable and socially disadvantaged people become sicker and die earlier than people with higher social status, largely because they are at greater risk of exposure to harmful products such as tobacco or unhealthy foods and have limited access to health services. In resource-poor settings, the health care costs of cardiovascular disease, cancer, diabetes, or chronic lung disease can quickly consume household resources and push families into poverty. The exorbitant costs of NCDs, including often lengthy and expensive treatment and loss of breadwinners, force millions of people into poverty each year and stunt development.

Health is a multidimensional issue. The World Health Organisation Global there is a huge mismatch between countries‘ health financing needs and their current health spending. Developing countries account for 84 percent of the world's population and 90 percent of the global burden of disease, but only 12 percent of global health spending. The poorest countries bear an even higher share of the burden of disease and injury, but have the fewest resources to finance health services. These underlying population and epidemiological dynamics will have profound implications for the economies and future health needs of all countries. The world‘s population is expected to grow to 7.5 billion by 2020 and 9 billion by 2050. Most of this growth is expected to occur in developing countries.

In the IDF South-East Asia (SEA) Region in 2021, 90 million adults (20-79) would have diabetes, according to the International Diabetes Federation. The number of adults with diabetes in the IDF SEA Region is currently at 46 million, representing 51% of all adults with diabetes in the region. This number is projected to rise to 113 million by 2030 and 152 million by 2045.

Diabetes is one of the top 10 main causes of death, making it one of the biggest global health problems of this century, according to WHO reports. Diabetes would cause 1.6 million deaths in 2019, making it the tenth largest cause of mortality worldwide. Nearly 592 million people are expected to die from diabetes by the year 2035. Previously thought to be a disease of the wealthy "Western" nations, type 2 diabetes, which accounts for 90% of all cases of diabetes, has spread globally and is now a major cause of disability and mortality that affects increasingly younger age groups. Diabetes has become a pandemic in several developing nations, including China and India.

Following an important percentage growth of 70% during 2000, diabetes has risen to the top 10 causes of death. A 80% increase in male fatalities due to diabetes since 2000 is also one of the top 10 causes of male mortality.

Methodology

Population: The clients were diabetics who were Primary health Centre for diabetic treatment. They were selected after assessing the eligibility to fulfill the inclusion and exclusion criteria.

Inclusive criteria.

- The individuals who are diagnosed to have type 2 diabetes
- Individuals without any complications were included in the sample for the present experimental in the age group between 40-60 years of both genders
- Who can read and write the local language.

Exclusive criteria

- The individuals who had major or minor complications, associated illness, learning difficulties.
- Who cannot read and write the local language were not included for the study.

Results

Table No.5.1: Distribution of participants according to the demographic variables

S.No	Demographic variable	Control group		Experimental group		χ^2	P value
		No	%	No	%		
1	Age						
	<40 yrs	6	30	10	50	0.639	NS
	40-50yrs	3	15	5	25		
	>50 yrs	11	55	5	25		
2	Gender						
	Male	9	45	6	35	0.960	NS
	Female	11	55	14	65		
3	Marital Status						
	Married	20	100	20	100	0.000	NS
	Unmarried	0	0	0	0		
4	Education						
	School	11	55	10	50	0.100	NS
	UG	9	45	10	50		
5	Employment status						
	Cooley	7	35	5	25		
	Private	7	35	6	30	1.410	NS
	Govt	3	15	3	15		
	Others	3	15	6	30		
6	Family Income						
	<10000	4	20	4	20	0.000	NS
	10000– 20000	16	80	16	80		
7	Family Size						
	1-56	14	70	11	55	3.4	NS
	–10	6	30	9	45		
N=40							

Table No.5.2: Distribution of participants according to the history of illness
N=40

S.No	Demographic variable	Control group		Experimental group		χ^2	P value
		No	%	No	%		
1	Duration of illness <2.5 years 2.5to5years5 to 7.5years 7.5 to10 years	 4 7 6 3	 20 35 30 15	 0 11 8 1	 0 55 40 5	6.175	NS
2	History of Smoking Yes No	 5 15	 15 85	 6 14	 30 70	0.205	NS
3	History of Alcoholism Yes No	 4 16	 20 80	 4 16	 20 80	0.000	NS
4	Previou straining Yes No	 0 20	 0100	 0 20	 0100	0.000	NS
N=40							

Table No:5.3 Weight and BMI of the participants before and after the Intervention

S.NO	Parameter	Group	MEAN ±SE	Significance Paired t test		Significance Unpaired t test	
				CON PRE & POST	EXP PRE& POST	CON & EXPPRE	CON & EXPPOST
1	Weight	Control group Pre test	77.11 ±2.58	t = 0.57NS	t=3.876p<0.01	t = 0.87NS	t = 1.17NS
		Control group Post test	77.24 ±2.54				
		Experimental Group pre test	73.65 ±2.99				
		Experimental group Post test	72.69 ±2.92				
2	BMI	Control group Pre test	31.90 ±1.15	t = 0.545NS	t= 3.09 p<0.01	t=1.798NS	T =2.206 P<0.05
		Control group Post test	31.95 ±1.27				
		Experimental Group pre test	28.91 ±1.19				
		Experimental Group post test	28.38 ±1.15				
N=40							

Table No:5.4 PPBS, FBS, HbA1c and Cholesterol of the participants before and after the intervention

S. No	Parameter	Group	Mean±SE	Significance Paired t test		Significance Unpaired t test	
				Con pre & Post test	Exp Pre & Post test	Con & Exp pre test	Con & Exp post test
1	PPBS	Control group Pre test	280.30 ±25.21	t=1.758NS	t = 5.418p<0.001	t = -0.24 NS	t = -3.11P<0.01
		Control group Post test	257.15 ±18.36				
		Experimental Group pre test	271.25 ±26.43				
		Experimental Group post test	185.1 ±14.06				
2	FBS	Control group Pre test	186.05 ±16.04	t =0.795NS	t = 4.686p<0.001	t=-0.825NS	t = -3.76P<0.05
		Control group Post test	179.90 ±12.36				
		Experimental Group pre test	167.6 ±15.54				
		Experimental Group post test	124.25 ±8.13				
3	HbA1C	Control group Pre test	10.21 ±0.48	t = 3.495P<0.05	t = 6.950 P<0.001	t = 0.43NS	t = -2.23P<0.05
		Control group Post test	9.49 ±0.49				
		Experimental Group pre test	10.56 ±0.66				
		Experimental Group post test	7.98 ±0.40				
4	CHOLESTEROL	Control group Pre test	203.70 ±10.83	t = 2.008 p<0.05	t = 5.145 p<0.001	t = -0.14 NS	t = - 2.09 P<0,05
		Control group Post test	197.7 ±9.26				
		Experimental Group pre test	201.7 ±7.89				
		Experimental Group post test	169.85 ±9.54				
N=40							

Table No.5.5: psycho social measurements of participants before and after the intervention

S. No	Para-meter	Group	Mean±SE	Significance Paired T test		Significance Unpaired t test	
				cont pre & post test	exp pre & post test	con & exp pre test	Cont & exp post test
1	WELLBEING	Control group Pretest	26 ±1.47	t=1.852NS	t=8.152 p<0.001	t=1.3NS	t=6.14 p<0.001
		Control group Post test	27.1 ±1.82				
		Exp. group Pre test	30.2 ±1.82				
		Exp. group Post test	55.5 ±4.25				
2	DEPRESSION	Control group Pre test	13.05 ±0.92	-	t=5.746 p<0.001	t=0.622 NS	t=3.11 p<0.05
		Control group Post test	13.05 ±1.1				
		Exp group pre test	12.1 ±1.21				
		Exp group Post test	8.6 ±0.91				
3	QOL	Control group Pre test	26.7 ±1.47	0.535 NS	t=15.681 p<0.001	t=0.317 NS	t=9.31 p<0.001
		Control group Post test	26.27 ±1.19				
		Exp group pre test	27.32 ±1.3				
		Exp group Post test	43.37 ±1.44				
S. No	Para-meter	Group	Median (25— 75 percentile)	Significance Wilcoxon test		Significance Man Whitney rank sum test	
				cont pre & post test	Exp pre & post test	con & exp pre test	Cont & exp post test
1	WELLBEING	Control group Pre test	26 (21–31)	W= 0.246NS	W=3.921P <0.001	T=177.5NS	T=51.5P <0.001
		Control group Post test	28 (18–31)				
		Exp. group Pre test	26.5 (19.2– 41.7)				
		Exp. group Post test	58.5 (36- 69.5)				
2	DEPRESSION	Control group Pre test	12 (10–14.75	W=0.122NS	W=3.756P< 0.001	T= 170.5NS	T=107.50<0.01
		Control group Post test	12 (9.25–17)				
		Exp group	11				

		Pretest	(8–17.5)				
		Exp group post test	9.5 (5–11)				
3	QOL	Control group Pre test	24.55 (21.8– 28.8)	W=1.401NS	W=3.922P< 0.001	T=173.5NS	T=10.5P<0.001
		Control group Post test	24.55 (21.7– 28.3)				
		Exp group pre test	26.3 (22.9– 30.8)				
		Exp group Post test	42.3 (37.2–49)				
N=40							

Table No.5.6: Economic parameters of participants before and after the Intervention

S. No	Parameter	Group	Mean ±se	Significance Paired t test		Significance Unpaired t test	
				Con pre & post test	Exp pre & post test	Con &e xp pre test	Con &e xp post test
1	Direct cost	Control group Pre test	1946 ± .	t= 1.158NS	t = 2.587p<0.05	t = 1.26NS	t = 1.49NS
		Control group Post test	1816 ± .				
		Experimental group pre test	1780.5 ±73.21				
		Experimental Group post test	1649.5 ±67.98				
5	Indirect cost	Control group Pre test	3632 ±.	t = 1.014NS	t = 9.649p<0.001	t = 1.43NS	t = 2.94P<0.05
		Control group Post test	3951 ± .				
		Experimental Group pre test	3382.5 ±108.78				
		Experimental group post test	2994± 91.68				
N=40							

Table No.5.7: Self-care measurements of participants before and after the Intervention

S.No	Parameter	Group	Mean ±se	Significance Paired t test		Significance Unpaired t test	
				control pre & post test	Experimen-tal pre & post test	control & experimental pre test	Control & experimental post test
1	Self-care	Control group Pre test	42.05 ±2.97	t=0.677NS	t=12.29p<0.001	t=2.32p<0.05	t=3.01p<0.05
		Control group Post test	42.55 ±3.01				
		Experimental Group pre test	32.9 ±2.56				
		Experimental Group post test	58.2 ±2.76				
S.No	Parameter	Group	Median (25–75 percentile)	Significance Wilcoxon signed rank test		Significance Man Whitney rank sum test	
				cont pre & posttest	Exp pre & post test	con & exp pre test	Cont & exp post test
1	Self-care	Control group Pre test	43 (28–52)	W =1.592 NS	W=3.925P<0.001	T =126 NS	T =101.5 P<0.05
		Control group Post test	49 (39–56)				
		Experimental Group pre test	31 (26-42)				
		Experimental group post test	60 (49–68.5)				
N=40							

Key conclusion

Majority of the Diabetes client 58.2% exhibited moderate level of knowledge in the post test. This shows that the effectiveness of training program regarding self-care of diabetes among the clients.

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