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Awareness of Preventive Measures about Cardiovascular Disease and its Risk Factors Among Diabetic Patients

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Abstract

Background: Awareness regarding Cardiovascular Disease (CVD) and the dangers associated with it among diabetics is crucial, according to recent studies. Since diabetics are more likely than non-diabetics to develop CVD, it is imperative to comprehend the connection between diabetes and heart disease. Diabetes patients can lower their risk of heart disease by practicing prevention, and lifestyle modifications including diet and exercise can lower the incidence of CVD. Nonetheless, due to several variables such socioeconomic disparities, low health literacy, and cultural attitudes, there is still a lack of understanding regarding diabetes prevention for those who already have the disease. Diabetes patients tend to overestimate their risk of CVD, which emphasizes the need for educational initiatives to refute myths.

Method: Among the methods to strengthen the cardiovascular system and prevent CVD in diabetics are patient. CVD poses a serious threat to world health, especially to those who have diabetes mellitus. Diabetes and CVD have a complicated relationship that includes endothelial dysfunction, dyslipidemia, chronic inflammation, and insulin resistance

Result: One hundred and eight patients participated in the survey, giving a response Table 1 shows the socio- demographic characteristics of the studied participants. Among the participants 66 (59.5%) of them female, 42 (37.8%) of them were male.

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Conclusion: Modifications to lifestyle that include exercise, heart-healthy eating, giving up smoking, and maintaining a healthy body mass index can help lower the risk of CVD. However, a large number of diabetics lack sufficient knowledge about preventative measures, and differences in awareness are influenced by cultural norms, traditions, and socioeconomic level. Education tactics can increase knowledge and adherence to preventative practices. It includes patient education programs, training programs for healthcare workers, and digital health technology. Community obstacles can also be addressed with the aid of support networks and culturally sensitive tactics. Notwithstanding improvements in education, fewer health care delivery systems being available, and linguistic and cultural hurdles.

Keywords: Cardiovascular disease (CVD), diabetes, awareness, risk, prevention.

Introduction

Recent studies highlight the need to increase awareness of cardiovascular disease (CVD) and its associated risks in diabetics. Understanding the link between diabetes and heart disease is important because many studies have shown a link between the two diseases. In 2011, Kannel conducted an analysis of studies showing that diabetics have a higher risk of CVD compared with non diabetic individuals. Subsequent studies further elucidated the pathophysiological mechanisms underlying this relationship, including insulin resistance, chronic inflammation, and endothelial dysfunction.

Prevention is important in reducing preventive measures are essential to limit the risk factors of cardiovascular disease in diabetic person. A significant number of lifestyle interventions, such as physical activity and diet, can reduce the incidence of cardiovascular disease in people with diabetes (Patel, Nessel & Kumar, 2023). Additionally, medical interventions aimed at glycemic control, blood pressure control and lipid reduction have been shown to be effective in reducing cardiovascular risk in diabetic patients (Jyotsna et al., 2023).

Despite the clear link between diabetes and heart disease, knowledge about prevention for people with diabetes is still inadequate. Factors such as low health literacy, cultural beliefs, and socioeconomic differences contribute to this lack of awareness (Asharani et al., 2021). In addition, many diabetic patients overestimate their risk of cardiovascular disease, highlighting the need for educational programs to counter negative assumptions (Carey, Wright Jr, Taler & Whelton, 2021).

Recent studies suggest various strategies to improve the cardiovascular system for the prevention of CVD in people with diabetes. Patient education programs, physician training, and the use of health technology are considered promising strategies for awareness and adherence (Khoong et al., 2021).

Cultural interventions and collaborative support are also recommended, to solve specific problems known across many cultures (Islam, Taylor & Faull, 2021).

There is an urgent need for awareness and preventative measures since young people are developing cardiovascular disease (CVD) risk factors such as obesity, hypertension,

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dyslipidemia, and diabetes at an increasingly early age. In contrast to previous tactics, it is critical to address these issues at an early age. Children and adolescents who are very obese have a significantly higher risk of heart failure, cardiovascular issues, and premature death than their counterparts who are not overweight or obese. Therefore, putting preventive measures into practice is critical. Spreading awareness about CVD and the risks it poses, particularly via targeted educational activities, can assist individuals in making better health decisions and encouraging behavioral changes (Yang et al., 2024).

World Health Organization (WHO) highlights that, cardiovascular disease (CVD) is the top most reason for mortality worldwide, making up about 31% of all deaths. In Pakistan, a study published in the Pakistan Journal of Medical Sciences found that around 30% of the population is affected by CVD. It's a significant health concern in both global and local contexts (Fishman, 2010).

The implications of CVD as a dominant health issue extend beyond individual health; they encompass broader socio-economic factors such as lost productivity, increasing healthcare costs, and the burden on families and communities caring for affected individuals. Moreover, disparities in healthcare access and quality exacerbate this issue, particularly in rural areas where healthcare resources may be limited.

Addressing the CVD epidemic requires a multifaceted approach that includes public awareness campaigns, preventive healthcare strategies, and changes in lifestyle practices. Effective interventions must also consider the socio-economic determinants of health that affect the population's risk factors for CVD. Given the substantial impact of CVD on mortality and morbidity, it is imperative for health authorities in Pakistan and globally to prioritize cardiovascular health through policy changes, education, and improving healthcare infrastructure.

There are consequences of increasing knowledge among diabetic patients on preventive measures for cardiovascular disease (CVD) aroused more health in the community. In diabetic patients the risk level of the CVD is quite high, so all the consciousness and advocacy of the preventive measures are necessary to cope with such elevated level of risk. Such education has to include training in avoiding bad habits like smoking and being overweight, together with different ways of physical activity, healthy diet, regular medication and regular medical checkups. This is designed to strengthen people and encourage them to avoid cardiovascular diseases stakeholders. Consequently, the under utility of tackling with the educational barriers to information, including low health literacy, cultural beliefs, socioeconomic difference is also a key factor for the equity in the regard of information and sources allocation. Healthcare professionals, policymakers and other communities have the opportunity of empowered by informing, policy, and practice. They can, therefore, collaborate to effectively implement evidence

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based interventions and overall reduce the burden of CVD among the diabetes communities. By implementation of these initiatives such meaningful progress can be made in taking care of diabetes patients. Hence, the people suffering from this diagnosis are going to get substantial help along with more quality-of-life expectancy.

Study Objective

To assess the knowledge of diabetic patients regarding the risk factors of cardiovascular disease.

Research Methodology

Study Design

This study utilized cross-sectional design to measure the level of awareness among diabetic patients on measures aimed at reducing the risks for cardiovascular diseases (CVD) and the associated risk factors. The cross-sectional studies are particularly competent for taking the data at certain points of time and are appropriate to study the prevalence of conditions or linkages between the factors in populations.

Study Setting

This study was conducted in a tertiary care hospital. The healthcare institution permitted getting a maximum number of diabetic patients within their population, and these patients represent different faces of the problem, taking into consideration their ethnicity, medical history, and social status. Research being conducted in such a wide-ranging environment greatly improves the program's ability to generalize findings from this survey, and this gives us an instructive perspective in assessment of measures to prevent the cardiovascular disease of the diabetic population.

Study Population

The study population was adult diabetic patients aged 18 and above who have been diagnosed as diabetes mellitus. Target population was chosen from different tertiary care centers. The diversity issue was considered, and the program strived to bring this up by creating demographic characteristics like, age, gender, ethnicity, educational level, and socioeconomic status

Study Duration

This study took place from December, 2023 to May, 2024 including the recruitment of participants and the data collection, analysis as well as dissemination.

Sample Size

The sample has been selected using a population mean with a p value 0.05 and confidence level 95% which yielded 108 diabetic patients, where the phenotypes was considered adequate diversity as well as demographic characteristics. For this study, we included participants aged 18 years and above, having diabetes mellitus and

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volunteering to be the part of our research. Stratified sampling was used as a means of ensuring proportionate representation in the demographic categories by ensuring oversampling of members.

Sampling Technique
Convenient sampling was used so that diverse demographic is represented in a balance. Healthcare setting was classified based on place, nature and applicants were chosen in each stratum randomly to reduce selection bias.

Inclusion Criteria
- The participants included were diagnosed with diabetes mellitus.
- Both types of diabetes mellitus, either type-I or type-II was included.
- Willingness to participate in the study and provided informed consent.
- Ability to comprehend and respond to study questionnaires or interviews.

Exclusion Criteria
- Individuals under the age of 18.
- Participants having hypertension as comorbidity.
- Pregnant women or individuals with gestational diabetes.
- Individuals with cognitive impairments or language barriers that prevent meaningful participation in the study.
- Participants under end-of-life care, those experiencing terminal illness that may be affecting them intellectually, or any other specific requirements.

Research Tool
An adopted questionnaire of knowledge about CVD risk factors was used to collect data in this study. The data collection tool was reliable with a Cronbachs' alpha coefficient value 0.76 (Bashatah et al., 2023). The questionnaire was filled by diabetic patients of tertiary care hospital after taking permission from medical director of the hospital. The questionnaire consists of two sections:

Demographic Questionnaires
Demographic survey questions ask survey respondents for background information to help survey creators better understand their audience. Parameters included as respondent's age, gender, race, ethnicity, social status, MR number, level of education, marital status, etc.

Knowledge Assessment Questionnaire
Knowledge assessment questionnaire comprised of evaluating the knowledge of participants related to risk factors of CVD.

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Ethical Considerations

- Participants' privacy was protected. And their identity was not revealed in any publication resulting from this study.
- The participation in this research study was voluntary. Participants were given the right to withdraw their consent to participate at any time as well as there is no penalty to withdraw from this study.
- The rights of research participants were protected, and the guidelines established by the Rashid Latif Nursing College ethical committee was adhered to when conducted the study.
- Every participant was provided a written informed permission.
- All data collected and information was kept private.
- The participants were advised that there are no dangers or drawbacks to the study's methodology.

Study Variables

Demographic variables

- Age, gender, ethnicity, education level, socioeconomic status.

Clinical variables

- Duration of diabetes, type of diabetes, co morbidities.
- Healthcare access: insurance status, access to healthcare facilities.

Dependent Variables

- Level of awareness regarding preventive measures for CVD.
- Knowledge of cardiovascular risk factors.
- Adherence to lifestyle modifications (physical activity, diet, smoking cessation).
- Adherence to medication regimens.

Data Collection and Distribution

The questionnaire was distributed among individuals in Lahore, aged above ≥18 year's diabetic patients. For this purpose we looked out for the responses and distribution of the study tool. The survey was distributed primarily using convenient sampling to reach out to a significant number of patients who were interested in answering the survey. To prevent some single individuals from entering the survey more than once, the survey was restricted to one response.

Statistical Data Analysis

All data were analyzed in SPSS using basic statistics. A descriptive analysis was conducted to assess the prevalence and sociodemographic factors of the study population. The frequency, descriptive and psychometric test was used for categorical

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variables analysis whenever applied. The data were analyzed using Statistical Package for Social Sciences (SPSS).

Results

One hundred and eight patients participated in the survey, giving a response. The table. 1 shows the socio- demographic characteristics of the studied participants. Among the participants 66 (59.5%) of them female, 42 (37.8%) of them were male.

Table 1: Participants' Sociodemographic and Professional Characteristics (n=108)

Variables	Frequency (n)	Percentage (%)
Gender		
Male	42	37.8%
Female	66	59.5%
Age		
18–26	12	10.8%
27–35	46	41.4%
36–45	50	45.0%
Socioeconomic status		
Lower class	42	37.8%
Middle class	54	48.6%
Upper class	12	10.8%
Residence		
Rural	55	49.5%
Suburban	24	21.6%
Urban	29	26.1%
Family support		
Very supportive	41	36.9%
Somewhere supportive	42	37.8%
Neutral	25	22.5%
Are you diagnosed patient?		
Yes	108	100%
No	0	0

Regarding socioeconomic status (SES), half of the 54 (48.6%) participants were middle class, slightly less than two-thirds (37.8%) were lower class 10.8% were upper class. In terms of residence, more than one-third of the participants (49.5%) were from rural areas, 21.6% suburban and 26.1% from urban area. In this study, all respondents were diagnosed with the disease.

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Table 2: Knowledge about CVD Risk Factors among the Participants (n=108)

Variables	True n(%)	False n(%)	I Do Not know n(%)
Is high blood pressure a risk factor for CVD?	59(53.2%)	42(37.8%)	7(6.3%)
Is overweight a risk factor for CVD?	73(65.8%)	26(23.4%)	9(8.1%)
Is excessive alcohol intake a risk factor for CVD?	84(75.7%)	14(12.6%)	10(9.0%)
Do you think Diabetes is a risk factor for CVD?	45(40.5%)	55(49.5%)	8(7.2%)
Is physical inactivity a risk factor for CVD?	71(64.0%)	32(28.8%)	5(4.5%)
Is cigarette smoking a risk factor for CVD?	83(74.8%)	18(16.2%)	7(6.3%)
Are consuming foods rich in fats instead of vegetables and fruit a risk factor for CVD?	44(39.6%)	43(38.7%)	21(18.9%)

The table. 2 presents responses regarding various risk factors associated with cardiovascular disease (CVD). For high blood pressure, 53.2% of respondents believe it is a risk factor, 37.8% disagree, while 6.3% are unsure. Overweight is recognized as a risk factor by 65.8% of participants, with 23.4% denying its association and 8.1% indicating they do not know. Excessive alcohol intake has the highest acknowledgment, with 75.7% identifying it as a risk factor, whereas 12.6% consider it not a risk and 9.0% are uncertain. When it comes to diabetes, only 40.5% see it as a risk factor for CVD, contrasting sharply with the 49.5% who think it is not and the 7.2% who do not know. Physical inactivity is acknowledged by 64.0% as a risk factor, with 28.8% asserting it is not true and 4.5% indicating uncertainty. Cigarette smoking is recognized by a significant 74.8% as a risk factor, while 16.2% disagree. Lastly, regarding the consumption of foods rich in fats instead of fruits and vegetables, opinions are nearly split, with only 39.6% believing it is a risk factor, 38.7% stating it is not, and a notable 18.9% indicating they do not know.

Overall, while there is strong awareness of classic risk factors like excessive alcohol intake, cigarette smoking, and being overweight, the divided perception surrounding diabetes and the significant uncertainty regarding dietary impacts suggest opportunities for enhancing public health education on CVD risk factors.

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Discussion

CVDs are affecting a growing proportion of people worldwide, and their frequency is rising daily. A class of disorders pertaining to the heart and blood arteries is known as cardiovascular illnesses. It's a complicated medical disease that can manifest in a variety of ways, either abruptly or gradually. A multidisciplinary approach is necessary for the management of CVDs, even in cases when healthcare professionals advise and support patients and persons in practicing self-care. The greatest treatment for patients would come from a combined understanding of the disorders. Individuals who possess enough knowledge about the disease are essential in preventing sudden cardiac occurrence. Additionally, being well-informed can enable people to adopt healthy habits that prevent illness and ensure they receive the appropriate care (Leon & Maddox, 2015).

High blood pressure, elevated low-density lipoprotein (LDL) cholesterol, diabetes, smoking and second hand smoke exposure, obesity, poor diet, and inactivity were all noted by the Centres for Disease Control and Prevention. Thus, leading a healthy lifestyle—more specifically, abiding by treatment recommendations, engaging in regular physical activity, and making lifestyle changes has the potential to reduce the incidence of CVD in people. Additionally, increasing public awareness and providing ongoing education about diabetes and hypertension management may help to lower the death rate from heart disease and stroke by preventing and controlling risk factors. The majority of participants in this study (89.5%) concurred that the best ways to prevent cardiovascular disorders was to engage in regular exercise, stop smoking, and follow treatment recommendations (US Preventive Services Task Force et al., 2020).

CVD management necessitates a multidisciplinary approach, including support and counseling from healthcare professionals for patients and persons on self-care. The greatest treatment for patients would come from a combined understanding of the disorders. Individuals who possess enough knowledge about the disease are essential in preventing sudden cardiac occurrence. Additionally, having sufficient knowledge will enable people to adopt healthy habits that ward off illness and receive the appropriate care and guidance to properly manage their condition. People need to be fully aware of the risk factors for CVD and the main methods of prevention as a result. Thus, this study's objective was to assess current understanding of CVD risk factors and main preventive techniques in order to identify any potential gaps (Hossain, 2024).

Conclusion:

Adults in Lahore are adequately aware of the risk factors for CVD and the therapies that can prevent it, but ongoing awareness-raising is still necessary to lower the prevalence of CVD. The knowledge of respondents regarding CVD risk factors and preventive measures was found to be significantly correlated with age, gender, educational attainment, and the existence of chronic illness. Encouraging young individuals to practice good health care and to comprehend the factors that contribute to people becoming more health concerned as they age is vital. People need to be educated about disease management and risk factors, and they also need to make lifestyle adjustments.

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Another important strategy for lowering the occurrence may be encouraging patients to adhere to their medication regimen.

Recommendation:
Due to the high prevalence and significant impact of this comorbidity on public health, it is crucial to investigate cardiovascular disease (CVD) in diabetic patients. Epidemiologists' examinations can lead huge scope epidemiological investigations to survey the pervasiveness, frequency, and chance variables related with CVD in diabetic patients. The burden of CVD can be better understood with the help of these studies.

Limitations:
Our investigation has few limits. Firstly, it is restricted to Rashid Latif Medical Complex capital territory and focuses on evaluating knowledge of CVD risk factors and preventive strategies. Secondly, the conclusions of the study cannot be broadly applied due to the smaller sample size. Despite these drawbacks, it is imperative that a report of this kind be produced in order to identify any problems from the outset, look into their implications for the research, and provide solutions.

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