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DIABETES MELLITUS–ASSOCIATED ALL-PURPOSE AND CARDIOVASCULAR DISEASE MORTALITY IN THE MAIN HEALTH CARE FACILITY OF MALES

[1]Dr. Iqra Arshad, [2]Dr. Hamad Ullah,[3]Dr. Ramsha Anwar Ali Safri
[1]118664-P, iqraarshad614@gmail.com
[2]35107-N,drhamadullah739@gmail.com,
[3]84550-S, ramshasafri@gmail.com,

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Abstract:

Background: *Diabetes and an augmented risk of CHD also known as coronary heart disease have long been associated, although the danger's exact magnitude is unknown.*

Objective: *The aim of this research is to assess and evaluate the effect of diabetes and previous CHD on mortality from all causes and CHD.*

Methods: *In a retrospective longitudinal research, 91285 male physicians whose ages ranged from 40 to 84 were grouped into the following 4 groups: (1) a control group of 82 247 males who were at baseline independent of CHD and diabetes, (2) 2317 men who had experienced diabetes without experiencing CHD, (3) 5906 men who had experienced CHD without experiencing diabetes, and (4) 815 men who had experienced both conditions. Both coronary heart disease (CHD) and overall mortality rates were evaluated in these groups.*

Results: *During 5-year period (497952 people) 3627 fatalities from all causes were noted, including 1242 CHD deaths. Men with diabetes but no CHD had a maturity level hazard ratio of 2.3 (2.0-2.6) with a 95% confidence interval, men with CHD but no diabetes had a maturity level hazard ratio of 2.2 (2.0-2.4), and men with both CHD and diabetes had a maturity level hazard ratio of 4.7 (4.0-5.4) with a 95% confidence interval for death from any cause. Men with diabetes who did not have CHD had a 3.3 (2.6-4.1) chance of mortality from CHD, men with CHD who did not have diabetes had a 5.6 (4.9-6.3) risk of mortality from CHD, and men who had both diabetes and CHD had a 12.0. (9.9-14.6) the risk of death from CHD. After multivariate adjustments for body mass index (BMI), alcohol usage, physical activity, and smoking status as well as stratified by these covariates, these correlations remained constant.*

Conclusions: *These prospective data show a strong correlation between diabetes and an elevated risk of death from CHD and all-cause. The increased risk diabetes poses for mortality from all causes is comparable to that posed by a record of CHD, although death from CHD is more strongly predicted by a history of CHD. But those who have both CHD and diabetes are known to be at a higher risk.*

Keywords: *diabetes, disease, heart, cardiovascular*

Corresponding author:
Iqra Arshad,
118664-P, iqraarshad614@gmail.com

QR code

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INTRODUCTION:

There has long been a link between DM and a higher risk of developing CHD. [1]

Men with DM are 2 to 3 times more likely than men without diabetes to die from CHD, and women with diabetes are even more at risk, according to a large body of epidemiologic studies. [2,3] Cardiac tamponade events have a higher case-fatality rate in persons with diabetes, and perioperative fatality from severe cardiac events is greater in those with diabetes, according to studies. [4,5]11 Patients with diabetes had a slower drop in cardiovascular events death between 1982 and 1984 when compared to individuals without diabetes during those years. [6] The amount of the elevated risk linked to prior MI in comparison to the diabetes-related CHD risk, and if it is equivalent, are both hotly contested topics. For individuals with a history of MI, the National Cholesterol Education Program advises more aggressive lipid-lowering medication than for those without a documented CHD but with risk factors like diabetes.[7] Recent research of middle-aged Finnish men and women found that individuals with diabetes but no heart murmur were just as at risk of dying from cardiovascular disease as those without diabetes and no MI history. [8]

The recruitment cohort for the Pakistan Physicians' Health Study (PHS) offered a special opportunity to discuss the relationships between diabetes and the risk factors for CHD, all-cause mortality, and CHD death. We assessed by comparing the risks of dying from heart disease and all-cause mortality across 4 subgroups of individuals in this enormous cohort of 91285 men, aged 40 to 84 at baseline: (1) free from CHD and DM (2) no CHD but with DM (3) no DM but with CHD and (4) with both DM and CHD

METHODS:

In order to determine the advantages and disadvantages of ibuprofen and beta carotenoids in the protection of cancer and heart illness, the PHS was a placebo-controlled, double-blind, and randomized experiment. 261248 male doctors were given informed consent forms, letters of invitation, and baseline surveys starting in 2020. 104388 doctors have responded to the baseline enrollment survey as of December 2021. A total of 91285 men remained after the exclusion of men having liver disease, liver disease, a history of cancer, stroke, or renal illness since these disorders may have enhanced the chance of detecting diabetes and CHD. 82247 men who have never suffered from diabetes or heart disease make up the reference group for our analysis, along with 2317 men who admitted experiencing diabetes at baseline but no heart disease, 5906 men who admitted experiencing CHD, and 815 men who admitted experiencing both conditions. Later, around 25% of this group was randomly assigned to the study.

In the first step, participants were asked to provide information on their ages and any known medical disorders, such as diabetes mellitus, angina pectoris, and a history of MI. Additionally, information about coronary risk factors was requested, such as arterial pressure, frequency of alcohol use, history of high cholesterol medication use, history of hypertension medication use, cholesterol level, history of cigarette smoking, frequency of vigorous exercise, and a number of cigarettes smoked per day by current smokers (daily, weekly, monthly, rare or never). Based on self-reported weight and height, the BMI was determined. Both the kind and period of diabetes were not recorded. The participants' age distribution suggests that type-II diabetes was more common among them.

The existence or absence of CHD, diabetes or both amongst PHS participants' initial self-reports was not supported by medical record analysis. However, during the PHS's randomized phase, a review of the patient history in a survey of 100 randomly chosen respondents who made this prognosis was capable of confirming 95% of the reports of post-randomization chest pain and/or cardiac revascularization. [9] Additionally, earlier research among health professionals has demonstrated the validity of the coverage of hyperglycemia and CHD. [10]

Using the International Classification of Diseases, trained nosologists classified the fatalities (ICD-9). The major cause of fatalities that took place during a mean follow-up period of five years was identified using the "Automated Classification of Medical Entities Decision Tables." All deaths and CHD-related deaths were the ultimate goals we decided to pursue (ICD-9 codes 410-414). The National Death Index has been shown by medical professionals to be trustworthy for epidemiological reasons. In order to identify any dynamic capabilities in the fatality authorization from CHD to another heart attack, all cardiovascular deaths (aside from stroke) were also investigated as an endpoint. The outcomes, however, did not significantly vary from those attained when CHD fatalities were taken into account individually.

STATISTICAL ANALYSIS:

For the comparison group (respondents without diabetes and without CHD) and the other 3 groups, we estimated the means or percentages of the baseline risk factors. Since the Cox proportional hazards model takes the time to occurrence into account, we utilized it to establish age-adjusted and regression model risk values for each group vs the reference group (in this case, time to death). [11] Age, alcohol use, smoking, BMI, and physical activity were all taken into account in the multivariate analysis. Because diabetes raises the risk of these illnesses and because they may serve as intermediaries along the causative route, we did not include hypertension and high blood cholesterol in the major forms. To explore whether they may mitigate the consequences of diabetes, we added hypertension and high blood cholesterol in secondary models, but the results were consistent with the initial multivariate model.

RESULTS:

A average follow-up of 5 years revealed that 4 % (3627) of the study's doctors passed away. 46% of the fatalities (1676) were caused by heart illness (excluding stroke); 1246 of these fatalities were categorized as CHD deaths.

The confounding variables of the individuals are shown in Table 1. Males with CHD and diabetes were often older, more inclined to smoke, less fit and active, and alcohol users than men in the other three categories. Additionally, their incidences of hypertension and cholesterol were greater. Persons having a history of CHD but no previous diabetes exhibited a higher incidence of increased cholesterol when compared to participants without a history of CHD. Irrespective of their CHD condition, participants with diabetes claimed to drink less than those without the disease. No matter whether they had diabetes or not, those without CHD were more likely to never smoke.

Table 1: Characteristics in the presence and absence of DM and CHD

	With CHD		**Without CHD**	
	DM	**No DM**	**DM**	**No DM**
Total	815	5906	2317	82247
Avg Age	65.6	63.9	61.6	54.1
High cholesterol, %	28.2	22	13.3	7.6
Hypertension, %	43.2	33.3	32.4	16.8
Avg BMI	25.4	25.2	26	24.9
Smoking status, %				
Smoker (Past)	57.8	57.3	41	41.2
Smoked (Never)	31.4	30.1	42.4	46.9
Smoker (Current)				
More than 20 Cigarettes/per day	5.8	8.6	11.9	7.9
Less than 20 Cigarettes/per day	2.6	4.1	4.7	4
Exercise ≥1 time/wk, % Alcohol use, %	53.1	68	61.4	70.7
Daily	19.8	26.8	19.3	26
Weekly	31.7	43.8	37.8	46.2
≤Monthly	18.9	11.9	16.7	11.3

The 6721 participants who were diagnosed with CHD at the start reported a minimum of one MI without contemporaneous angina pectoris 2509 (37.3%), simply angina 2233 (33.2%), or both (1979, 29.4%). The age-adjusted hazard ratio for all-cause mortality was comparable in individuals with a history of diabetes but no CHD and those with a history of CHD but no diabetes (Table 2). Expectedly, those with both CHD and diabetes had a considerably higher probability of passing away from any cause. Those without diabetes or CHD had an age-adjusted hazard ratio of CHD mortality that was three times higher, five times higher, and twelve times higher than men with both conditions. The results for both all-cause and CHD mortality were unaltered in a significant manner after multivariate adjustments for body mass index, smoking habit, physical activity, and alcohol consumption. Figures 1 and 2's Kaplan-Meier curves likewise show the same results.

Table 2: All causes death's relative risk

	DM and CHD	CHD, No DM	DM, No CHD	No DM, No CHD
All-cause mortality				
Multivariate	10.6 (8.6-13.1)	5.4 (4.7-6.2)	2.9 (2.3-3.7)	1.0 (Ref)
Age-adjusted	12.0 (9.9-14.6)	5.6 (4.9-6.3)	3.3 (2.6-4.1)	1.0 (Ref)
RR with a 95% Confidence Interval				
Total = 1242)	132	445	89	576
CHD mortality				
Multivariate	4.2 (3.6-4.9)	2.2 (2.0-2.4)	2.1 (1.9-2.4)	1.0 (Ref)
Age-adjusted	4.7 (4.0-5.4)	2.2 (2.0-2.4)	2.3 (2.0-2.6)	1.0 (Ref)
Person-years of follow-up RR with a 95% Confidence Interval	3850	30612	12161	
Total = 3627	210	733	259	2425

All age groups showed elevated mortality risks linked to diabetes and/or CHD when individuals were divided into three age groups (40-54, 55-69, and 70-84 years). For males in the youngest group, the associations' magnitudes were highest (Table 3).

Table 3: Relative Risk (RR) of CHD Death for Various Age Strata

		CHD and DM	Range	No DM, CHD	Range	No CHD, DM	Range	No CHD, No DM
Age 70-84 Years								
RR (Confidence Interval = 95%)	Multivariate	6.7	(5.0-9.2)	3.6	(2.9-4.4)	1.9	(1.3-2.8)	1.0 (Ref)
	Age-adjusted	7.7	(5.8-10.2)	3.7	(3.0-4.4)	2.1	(1.5-3.0)	1.0 (Ref)
	Total = 521	**60**		**195**		**35**		**231**
Age 55-69 Years								
RR (Confidence Interval = 95%)	Multivariate	12.8	(9.6-17.2)	6.1	(5.0-7.3)	3.1	(2.3-4.4)	1.0 (Ref)
	Age-adjusted	14.8	(11.2-19.6)	6.6	(5.5-7.9)	3.7	2.6-5.0)	1.0 (Ref)
	Total = 584	**63**		**215**		**43**		**263**
Age 40-54 Years								
RR (Confidence Interval = 95%)	Multivariate	35	(16.5-74.1)	14.1	(9.3-21.3)	7.4	(3.8-14.5)	1.0 (Ref)
	Age adjusted	36.8	(18.3-74.0)	14.2	(9.4-21.3)	8.7	(4.6-16.4)	1.0 (Ref)
	Total = 137	**9**		**35**		**11**		**82**

The influence of moderating variables for our models other than age. Diabetes and CHD were each associated with increased mortality risk in all body mass index strata, with or without hypotension, irrespective of high cholesterol, with or without previous or present smoking, with or without vigorous exercise, and with alcohol consumption.

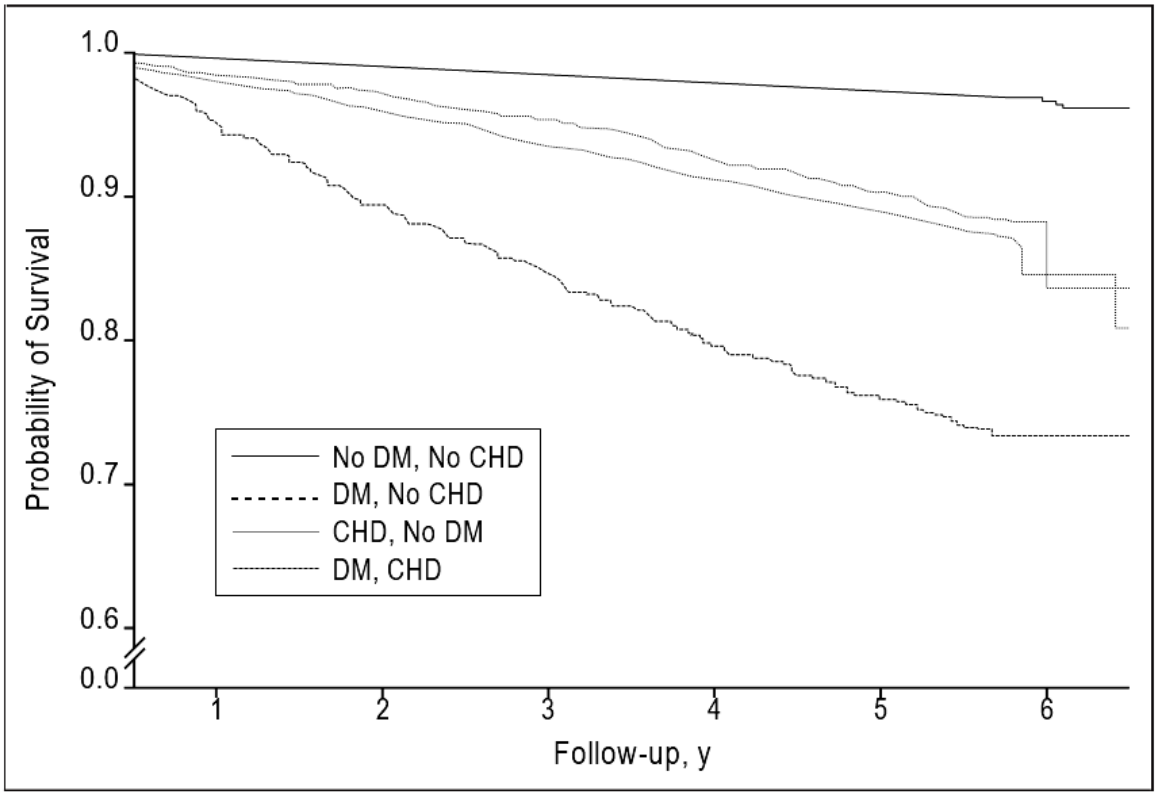

Figure 1: Categorized according to the history of CHD and DM

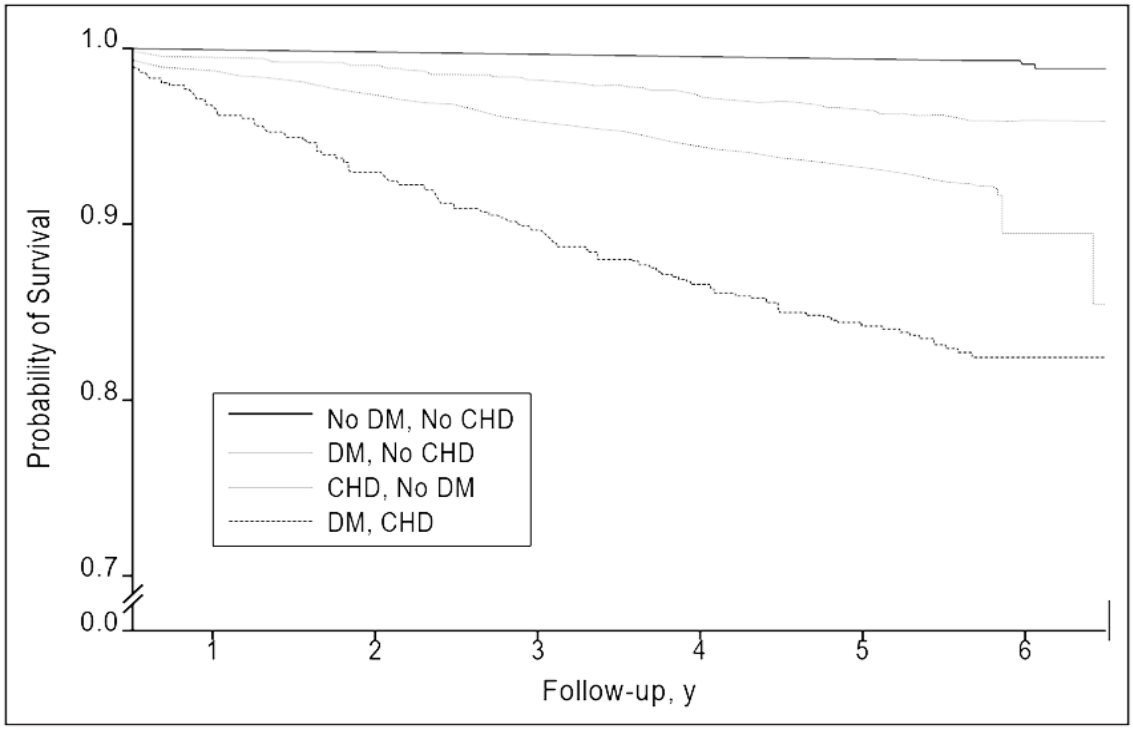

Figure 2: DM and CHD history stratified for CHD mortality among 91285 men

DISCUSSIONS:

These observational data show that self-reported diabetes is significantly linked to higher rates of CHD and overall death. With each carrying a twofold increased risk of death, the overall mortality risk linked with diabetes was almost equivalent to that related to previous CHD. The estimated risk of all-cause death was comparable for responders with a background of diabetes but no CHD and respondents with a background of CHD but no history of diabetes, which is probably attributable to the increased likelihood of non-cardiovascular mortality among patients with diabetes. Diabetes alone is more than fourfold the chance of dying from a CHD. While having a history of CHD increased the risk of dying from CHD more than diabetes did, having both diabetes mellitus and CHD dramatically increased the chance of dying from CHD compared to those who had neither condition. These elevated risks provide more evidence of how diabetes affects cardiovascular health. Traditional cardiovascular disease risk factors such as hypertension, tissue glycosylation, oxidative stress, and dyslipidemia, as well as platelet and fibrinolytic abnormalities that result in a super-activated platelet state, are all related to diabetes. [12,13]

Our findings are in contrast to those of a different study. [14] Since diabetes is a lower health concern for CHD in older persons than in middle-aged people, the difference in average ages between both the Finnish and PHS groups may be the cause of the different results between that study and ours. However, even in the later age groups, we were able to demonstrate that there was still a significant risk disparity in the PHS enrolling group between participants who already had CHD without diabetes and those who had previously experienced diabetes without CHD. Another significant distinction between the two studies is that, whereas the Finnish research included approximately equal numbers of males and females, the PHS included only male subjects. Several cohort prospective studies have shown that diabetes increases the risk of CHD in women more than it does in men, with age-adjusted CHD death rates in diabetic women is 3 to 7 times higher than those in non-diabetic women. Compared to males without diabetes, these values are 6, 7, and 2 to 3 times higher. [15]

The average difference in ages between both the Finnish and PHS groups may be the reason for the differing findings between that research and ours as diabetes is a lesser health hazard for CHD in older individuals than in middle-aged adults. We were able to prove, however, that there was still a serious risk difference between those who had CHD without diabetes and those who had diabetes without CHD in the PHS recruitment cohort, even in the later age categories.

Expert panels presently advise a more drastic decrease of blood pressure in diabetics with concurrent hypertension, low-dose aspirin usage in those with diabetes and other CHD hazard factors, and the use of lipid-reducing medications in diabetics with increased lipoprotein levels. [16,17]

These recommendations are meant for diabetics who also have other CHD risk factors, nevertheless. Our results suggest that the existence of diabetes alone warrants a more vigorous use of primary preventive treatments since whether other risk factors are present or not, diabetes is linked to a higher risk of CHD death. [18,19]

The size, prospective design, and generally homogenous makeup of the cohort, which reduces confounding by a number of characteristics, such as initial indication consciousness, access to medical treatment, educational achievement, and socioeconomic status, are the merits of our research. The research does, however, have a few significant flaws. The information was derived from self-reports, which might result in categorization errors. Self-reporting, however, has been demonstrated to be trustworthy for cardiovascular risk variables in studies of healthcare professionals, with a 95% probability of verification of CHD measures. [20-22] In a general public with limited access to healthcare, the hazard ratios may be considerably greater, leading to potentially slower and less aggressive diabetes and CHD diagnosis and treatment.

CONCLUSIONS:

Our results conclude that diabetes is a substantial risk factor for mortality from all causes and from CHD and that those who have both illnesses coexist are particularly at risk. These results demonstrate that patients with diabetes need rigorous primary and secondary preventive strategies. Clinical trials focusing on primary prevention in diabetics without cardiac diseases, such as the suggested. To develop new methods to lower the risk of heart disease in diabetics, it is necessary to combine data from observational studies, preventative measures of heart disease in Diabetes Mellitus Research, and the diabetic subgroup in the ongoing Antihypertensive and

Triacylglycerol Reducing Diagnosis to Protect Myocardial Infarction Trial.

REFERENCES:

1. Andersen, C. M., Johansen, J. B., Wehberg, S., Nielsen, J. C., Riahi, S., Haarbo, J., ... & DEFIB-WOMEN Investigators. (2022). Sex differences in the course of implantable cardioverter defibrillator concerns (Results from the Danish national DEFIB-WOMEN study). *Journal of Psychosomatic Research*, 111072.
2. Cerci, R. J., Fernandes-Silva, M. M., Vitola, J. V., Cerci, J. J., Neto, C. C. P., Masukawa, M., ... & Baena, C. P. (2022). Association of income level and ischemic heart disease: potential role of walkability.
3. Mungle, T., Das, N., Pal, S., Gogoi, M. P., Das, P., Ghara, N., ... & Krishnan, S. (2022). Comparative treatment costs of risk-stratified therapy for childhood acute lymphoblastic leukemia in India. *Cancer Medicine*.
4. Tolbert, M. (2022). Recipe Modification for Cardiovascular Health.
5. Babhulkar, P., Tiwaskar, S., & Pathade, A. (2022). Deficiency Of Vitamin D In India. *Journal of Pharmaceutical Negative Results*, 114-125.
6. Egenti, B. N., Chukwudi, F. T., Igweagu, C. P., Ubajaka, C. F., & Adogu, P. O. U. E-HEALTH AND TELEMEDICINE PRACTICE IN NIGERIA (1999-2017): CHALLENGES AND PROSPECTS.
7. Elghamrawy, S. M., Hassanien, A. E., & Vasilakos, A. V. (2022). Genetic-based adaptive momentum estimation for predicting mortality risk factors for COVID-19 patients using deep learning. *International Journal of Imaging Systems and Technology*, *32*(2), 614-628.
8. Bray, G. A., & Champagne, C. M. (2022). Obesity: Understanding and achieving a healthy weight. *Nutrition Guide for Physicians and Related Healthcare Professions*, 85-107.
9. Chen, S., Hu, Y., Zhang, W., & Liu, M. (2022). Analysis of Clinical Features and Related Factors of Silent Aspiration in Hospitalized COPD Patients. *Alternative Therapies in Health & Medicine*, *28*(7).
10. Buder, F., Selejan, S. R., Hohl, M., Kindermann, M., Herr, C., Lepper, P. M., ... & Böhm, M. (2022). Glycyrrhizin through liquorice intake modulates ACE2 and HMGB1 levels—A pilot study in healthy individuals with implications for COVID-19 and ARDS. *PloS one*, *17*(10), e0275181.
11. Hameed, M. H., Umer, M., Naeem, M. M., Butt, U. M., Tahir, A., & Tehseen, S. (2022). Inspecting the Occurrence of Hyponatremia and the Yearly Clinical Outcomes in Patient Hospitalised for Decompensated Heart Failure. *Annals of the Romanian Society for Cell Biology*, *26*(01), 1487-1492.
12. Mala, P., Khan, G. A., Gopalan, R., Gedefaw, D., & Soapi, K. (2022). Fijian medicinal plants and their role in the prevention of Type 2 diabetes mellitus. *Bioscience Reports*, *42*(11), BSR20220461.
13. Watvedt, K. (2022). *Is type 2 diabetes reversible with diet? A meta-analysis of randomized controlled trials* (Master's thesis, OsloMet-storbyuniversitetet).
14. Elgazzar, A. H., Alenezi, S. A., & Elfawal, M. A. (2022). Circulatory System (Cardiovascular and Lymphatic Systems). *The Pathophysiologic Basis of Nuclear Medicine*, 323-383.
15. Lloyd, N., & Khuman, A. S. (2022). AI in Healthcare: Malignant or Benign?. In *Artificial Intelligence in Healthcare* (pp. 1-45). Springer, Singapore.
16. Perlmutter, D. (2022). *Drop Acid: The Surprising New Science of Uric Acid—The Key to Losing Weight, Controlling Blood Sugar, and Achieving Extraordinary Health*. Hachette UK.
17. Gooday, C. (2022). *Monitoring of Charcot neuroarthropathy. A mixed methods, feasibility study* (Doctoral dissertation, University of East Anglia).
18. Mahmood, A., Kim, H., Kedia, S., & Dillon, P. Wearable health and activity trackers utilization and physical activity among informal caregivers in the United States.
19. Brejt, S. Z., Sobolevsky, S. A., Schlachter, T. R., Chapiro, J., Duran, R., Tacher, V., ... & Geschwind, J. F. H. (2022). Interventional radiology. *Yamada's Textbook of Gastroenterology*, 2774-2803.
20. Winston, W., Berl, R. L., & Sweeney, R. (2022). *Cases and select readings in health care marketing*. Routledge.
21. Magazzù, Giuseppe, et al. "Recognizing the Emergent and Submerged Iceberg of the Celiac Disease: ITAMA Project—Global Strategy Protocol." *Pediatric Reports* 14.2 (2022): 293-311.
22. Bakhsh, A. (2022). *Nosocomial endodontic microbiome and their systemic interaction* (Doctoral dissertation, King's College London).