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Research Article

Physicians' Perception of the Relevance of Cardiovascular Risk Factors in Patients with and without Type 2 Diabetes in Peru

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Abstract

Background: Since cardiovascular (CV) disease is one of the principal causes of mortality among Peruvian population, especially in people with type 2 diabetes (T2D), patient´s CV risk factors evaluation should be done as homogenously as possible. The aim of this study was to determinate what was the perception of different specialists in Peru, of CV risk factors in patients with and without T2D.

Methods: An on-line questionnaire on a convenient sample of physicians, from different medical specialties, was answered. The questionnaire assessed the physicians' perception of fourteen CV risk factors in patients with and without T2D, according to three ratings: very important, moderately important, and slightly important. We assessed the differences between medical specialties through graphs and chi-square tests, and also identified the risk factors considered as "very important" with the highest (≥90%) consensus amongst each specialty.

Results: A total of 156 physicians responded to the questionnaire, composed by endocrinologists (30%), cardiologists (26%), internists (18%), nephrologists (13%) and general practitioners (13%). In patients with T2D the importance of BMI ≥30, high LDL cholesterol level, triglycerides ≥ 150 mg/dL, and hyperuricemia were statistically different across medical specialties. Likewise In patients without T2D; triglycerides ≥150 mg/dL, hyperuricemia, pre diabetes, and hepatic steatosis. With the exception of general practitioners, consensus on at least one risk factor was attained in all specialties, albeit these risk factors were heterogeneous amongst them. The only risk factor that reached consensus across all specialties was high blood pressure.

Conclusion: Hypertension and smoking were the most important CV risk factors in T2D patients valued by the surveyed physicians, followed by levels of LDL-c and albuminuria. Cardiologists as well as endocrinologists, gave the same assessment to CV risk factors. For people without T2D, smoking was recognized as the most important CV risk factor, followed by hypertension and albuminuria.

Introduction

Cardiovascular disease (CVD) is the leading cause of mortality worldwide. World Health Organisation has estimated that 17.9 million of people have died of CVD in 2016 that represents 31% of global deaths **[1]**. Approximately three fourth parts of CVD occur in middle and low incomes countries **[1]**, Latin America is not the exception, with near as a million deaths per year and the tendency is increasing **[2]**. There are several guidelines that help identifying and treating cardiovascular (CV) risk factors **[3-5]**. According to the Peruvian National Institute of Statistics and Information Technology there were 23, 825, 154 people in Peru,

older than 18 years in 2020 and life expectancy have increased to 76.5 year **[6]**. National investigations have shown that the prevalence of CV risk factors, like type 2 diabetes (T2D), obesity, hypertension and smoking are near 7.0%, 18.3%, 14.1% y 18.4%,respectively **[7-9]**.

As in other neighbour countries, in Peru there is a lack of specialists to attend this population with high CV risk. According to the National Medical College there are 3017 internists, 1269 cardiologists, 560 nephrologists and 519 endocrinologists **[10]**.

People with diabetes are a very susceptible population to develop CVD, especially T2D, because of the coexistence of risk factors that they usually present **[11]**. Many times, these CV risk factors are present since the beginning of the disease **[12]**. Taking in account that almost two million of the Peruvian population have T2D, the number of endocrinologists is not enough to evaluate and treat so many patients that is why the majority of patients are being attended by internists and primary care physicians.

On the other hand, the arrival of new therapies for T2D that deliver CV safety and benefits, makes it extremely important to identify the CV risk in this group of patients.

Considering that there aren´t previous trials that assess the Peruvian physicians' perception about the CV risk factors, we decided to develop a questionnaire to evaluate it, and if these assessment is different for the patient with T2D or not.

Materials and Methods

Study Design

We conducted a data analysis after applying a questionnaire where physicians from different specialties assessed the importance of multiple CV risk factors in patients with and without T2D. This questionnaire was answered online during December 2019. Our objective was to analyze the agreements and disagreements from physicians' assessments.

Study Definitions

Risk factors in the questionnaire were defined as follows: Obesity as a BMI ≥30, high blood pressure as an arterial blood pressure ≥140/90 mmHg, hypertriglyceridemia as triglycerides ≥150mg/dL, and chronic kidney disease as a glomerular filtration rate < 60 ml/min. Additional risk factors were included in the questionnaire **(Table 1)**.

CV risk factor (RF) addressed
RF1. BMI >= 30
RF2. Arterial blood pressure >= 140/90 mmHg
RF3. Uncontrolled glycated hemoglobin*
RF4. High LDL cholesterol level
RF5. Triglycerides >= 150 mg/dL
RF6. Age >= 50 years old
RF7. T2D diagnosis >= 10 years*
RF8. Current microalbuminuria or macroalbuminuria*
RF9. Central obesity
RF10. Glomerular filtration rate < 60 ml/min
RF11. Family history of premature CV disease
RF12. Hyperuricemia
RF13. Hepatic steatosis
RF14. Cigarette smoking
*When asked about patients without T2D, these RF were replaced as follows: RF3. PreT2D RF7. Male sex RF8. Current microalbuminuria

Table 1: Set of CV risk factors included in the questionnaires.

Data Management

Statistical analysis

Physicians' responses were grouped according to each specialty, risk factor, and population (regarding patients with and without T2D). We used tables to describe the assessment categories (very important, moderately important, and less important) with absolute and relative frequencies. To assess the statistical differences between specialties we used the chi-square test. A statistically significant difference was set at a p-value of less than 0.05. The risk factors with the highest consensus (≥ 90%) on the "very important" category percentage in each specialty were described in a separate table. We used graphics to assess the variation of the "very important" category of the risk factors that presented a statistically significant difference across specialties.

Ethical Considerations

Since no patient was involved and we did not obtain the specialists identification during the answer of the questionnaire, an approval by an Ethics Committee was not necessary.

Results

A total of 156 physicians answered the survey. Endocrinologists were the largest group with 47 (30%) participants, followed by the cardiologists with 41 (26%), internists with 28 (18%), and nephrologists and general physicians with 20 participants each (13%).

Comparison across medical specialties' appraisal on CV risk factors in patients with and without T2D is shown in **Table 2 and Table 3**. When asked about patients with T2D, the risk factors that presented a statistical significant difference

between specialties were: BMI ≥ 30 (RF1), high LDL cholesterol level (RF4), triglycerides ≥ 150 mg/dL (RF5), and hyperuricemia (RF12). When asked about patients without T2D, the risk factors that presented a statistical significant difference between specialties were: pre diabetes (RF3), triglycerides ≥ 150 mg/dL (RF5), hyperuricemia (RF12), and hepatic steatosis (RF13).

			Specialty (N)					
		Total (156)	**Cardiology (41)**	**Endocrinology (47)**	**Nephrology (20)**	**Int. medicine (28)**	**Gen. physician (20)**	**P value**
RF1 n (%)	A	118 (76%)	33 (80%)	30 (64%)	11 (55%)	25 (89%)	19 (95%)	**0.028**
	B	36 (23%)	8 (20%)	16 (34%)	8 (40%)	3 (11%)	1 (5%)	
	C	2 (1%)	0 (0%)	1 (2%)	1 (5%)	0 (0%)	0 (0%)	
RF2 n (%)	A	149 (96%)	40 (98%)	45 (96%)	19 (95%)	26 (93%)	19 (95%)	0.926
	B	7 (4%)	1 (2%)	2 (4%)	1 (5%)	2 (7%)	1 (5%)	
	C	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
RF3 n (%)	A	122 (78%)	33 (80%)	32 (68%)	15 (75%)	23 (82%)	19 (95%)	0.157
	B	34 (22%)	8 (20%)	15 (32%)	5 (25%)	5 (18%)	1 (5%)	
	C	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
RF4 n (%)	A	135 (87%)	38 (93%)	45 (96%)	12 (60%)	24 (86%)	16 (80%)	0.001
	B	21 (13%)	3 (7%)	2 (4%)	8 (40%)	4 (14%)	4 (20%)	
	C	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
RF5 n (%)	A	52 (33%)	8 (19%)	17 (36%)	5 (25%)	10 (36%)	12 (60%)	0.001
	B	83 (53%)	31 (76%)	19 (41%)	9 (45%)	16 (57%)	8 (40%)	
	C	21 (14%)	2 (5%)	11 (23%)	6 (30%)	2 (7%)	0 (0%)	
RF6 n (%)	A	77 (49%)	16 (39%)	23 (49%)	7 (35%)	19 (68%)	12 (60%)	0.224
	B	78 (50%)	24 (59%)	24 (51%)	13 (65%)	9 (32%)	8 (40%)	
	C	1 (1%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
RF7 n (%)	A	128 (82%)	35 (85%)	41 (87%)	13 (65%)	24 (86%)	15 (75%)	0.301
	B	27 (17%)	5 (12%)	6 (13%)	7 (35%)	4 (14%)	5 (25%)	
	C	1 (1%)	1 (3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
RF8 n (%)	A	135 (87%)	34 (83%)	39 (83%)	19 (95%)	26 (93%)	17 (85%)	0.525
	B	21 (13%)	7 (17%)	8 (17%)	1 (5%)	2 (7%)	3 (15%)	
	C	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
RF9 n (%)	A	122 (78%)	33 (80%)	38 (81%)	14 (70%)	21 (75%)	16 (80%)	0.313
	B	31 (20%)	8 (20%)	8 (17%)	4 (20%)	7 (25%)	4 (20%)	
	C	3 (2%)	0 (0%)	1 (2%)	2(10%)	0 (0%)	0 (0%)	
RF10 n (%)	A	120 (77%)	31 (76%)	31 (66%)	17 (85%)	23 (82%)	18 (90%)	0.177
	B	36 (23%)	10 (24%)	16 (34%)	3 (15%)	5 (18%)	2 (10%)	
	C	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
RF11 n (%)	A	106 (68%)	32 (78%)	30 (64%)	12 (60%)	22 (79%)	10 (50%)	0.065
	B	44 (28%)	8 (20%)	16 (34%)	5 (25%)	6 (21%)	9 (45%)	
	C	6 (4%)	1 (2%)	1 (2%)	3 (15%)	0 (0%)	1 (5%)	
RF12 n (%)	A	51 (33%)	11 (27%)	12 (26%)	13 (65%)	5 (18%)	10 (50%)	<0.001
	B	87 (56%)	27 (66%)	21 (45%)	6 (30%)	23 (82%)	10 (50%)	
	C	18 (11%)	3 (7%)	14 (30%)	1 (5%)	0 (0%)	0 (0%)	
RF13 n (%)	A	60 (39%)	13 (32%)	19 (40%)	6 (30%)	14 (50%)	8 (40%)	0.251
	B	83 (53%)	24 (59%)	23 (49%)	10 (50%)	14 (50%)	12 (60%)	
	C	13 (8%)	4 (10%)	5 (11%)	4 (20%)	0 (0%)	0 (0%)	
RF14 n (%)	A	146 (94%)	40 (98%)	46 (98%)	16 (80%)	26 (93%)	18 (90%)	0.058
	B	10 (6%)	1 (2%)	1 (2%)	4 (20%)	2 (7%)	2 (10%)	
	C	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	

Table 2: Statistical comparisons amongst medical specialties assessment on CV risk factors in patients with T2D.

			Specialty (N)					
		Total (156)	**Cardiology (41)**	**Endocrinology (47)**	**Nephrology (20)**	**Int. medicine (28)**	**Gen. physician (20)**	**P value**
RF1 n (%)	A	97 (62%)	21 (51%)	29 (62%)	12 (60%)	21 (75%)	14 (70%)	0.388
	B	57 (37%)	19 (46%)	18 (38%)	8 (40%)	7 (25%)	5 (25%)	
	C	2 (1%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	1 (5%)	
RF2 n (%)	A	133 (85%)	35 (85%)	44 (94%)	16 (80%)	23 (82%)	15 (75%)	0.214
	B	22 (14%)	6 (15%)	3 (6%)	4 (20%)	5 (18%)	4 (20%)	
	C	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (5%)	
RF3 n (%)	A	92 (59%)	23 (56%)	28 (60%)	7 (35%)	21 (75%)	13 (65%)	0.001
	B	57 (37%)	17 (41%)	18 (38%)	8 (40%)	7 (25%)	7 (35%)	
	C	7 (4%)	1 (2%)	1 (2%)	5 (25%)	0 (0%)	0 (0%)	
RF4 n (%)	A	120 (77%)	32 (78%)	42 (89%)	11 (55%)	22 (79%)	13 (65%)	0.065
	B	34 (22%)	8 (20%)	5 (11%)	9 (45%)	6 (21%)	6 (30%)	
	C	2 (1%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	1 (5%)	
RF5 n (%)	A	40 (26%)	7 (17%)	12 (26%)	3 (15%)	8 (29%)	10 (50%)	0.030
	B	85 (54%)	26 (63%)	21 (45%)	11 (55%)	17 (61%)	10 (50%)	
	C	31 (20%)	8 (20%)	14 (30%)	6 (30%)	3 (11%)	0 (0%)	
RF6 n (%)	A	61 (39%)	14 (34%)	17 (36%)	5 (25%)	15 (54%)	10 (50%)	0.349
	B	86 (55%)	23 (56%)	27 (57%)	13 (65%)	13 (46%)	10 (50%)	
	C	9 (6%)	4 (10%)	3 (6%)	2 (10%)	0 (0%)	0 (0%)	
RF7 n (%)	A	42 (27%)	9 (22%)	13 (28%)	6 (30%)	10 (36%)	4 (20%)	0.583
	B	90 (58%)	22 (54%)	29 (62%)	10 (50%)	15 (54%)	14 (70%)	
	C	24 (15%)	10 (24%)	5 (11%)	4 (20%)	3 (11%)	2 (10%)	
RF8 n (%)	A	112 (72%)	27 (66%)	30 (64%)	18 (90%)	22 (79%)	15 (75%)	0.222
	B	40 (26%)	14 (34%)	14 (30%)	2 (10%)	5 (18%)	5 (25%)	
	C	4 (2%)	0 (0%)	3 (6%)	0 (0%)	1 (4%)	0 (0%)	
RF9 n (%)	A	116 (74%)	31 (76%)	35 (74%)	15 (75%)	21 (75%)	14 (70%)	0.763
	B	35 (23%)	9 (22%)	11 (23%)	3 (15%)	7 (25%)	5 (25%)	
	C	5 (3%)	1 (2%)	1 (2%)	2 (10%)	0 (0%)	1 (5%)	
RF10 n (%)	A	109 (70%)	27 (66%)	27 (57%)	16 (80%)	22 (79%)	17 (85%)	0.234
	B	45 (29%)	14 (34%)	19 (40%)	4 (20%)	5 (18%)	3 (15%)	
	C	2 (1%)	0 (0%)	1 (2%)	0 (0%)	1 (4%)	0 (0%)	
RF11 n (%)	A	103 (66%)	28 (68%)	32 (68%)	11 (55%)	22 (79%)	10 (50%)	0.582
	B	48 (31%)	11 (27%)	14 (30%)	8 (40%)	6 (21%)	9 (45%)	
	C	5 (3%)	2 (5%)	1 (2%)	1 (5%)	0 (0%)	1 (5%)	
RF12 n (%)	A	52 (33%)	11 (27%)	10 (21%)	12 (60%)	11 (39%)	8 (40%)	<0.001
	B	84 (54%)	27 (66%)	22 (47%)	7 (35%)	16 (57%)	12 (60%)	
	C	20 (13%)	3 (7%)	15 (32%)	1 (5%)	1 (4%)	0 (0%)	
RF13 n (%)	A	53 (34%)	11 (27%)	19 (40%)	6 (30%)	11 (39%)	6 (30%)	0.030
	B	87 (56%)	24 (59%)	24 (51%)	8 (40%)	17 (61%)	14 (70%)	
	C	16 (10%)	6 (15%)	4 (9%)	6 (30%)	0 (0%)	0 (0%)	
RF14 n (%)	A	141 (91%)	38 (93%)	44 (94%)	17 (85%)	26 (93%)	16 (80%)	0.397
	B	13 (8%)	2 (5%)	3 (6%)	2 (10%)	2 (7%)	4 (20%)	
	C	2 (1%)	1 (2%)	0 (0%)	1 (5%)	0 (0%)	0 (0%)	

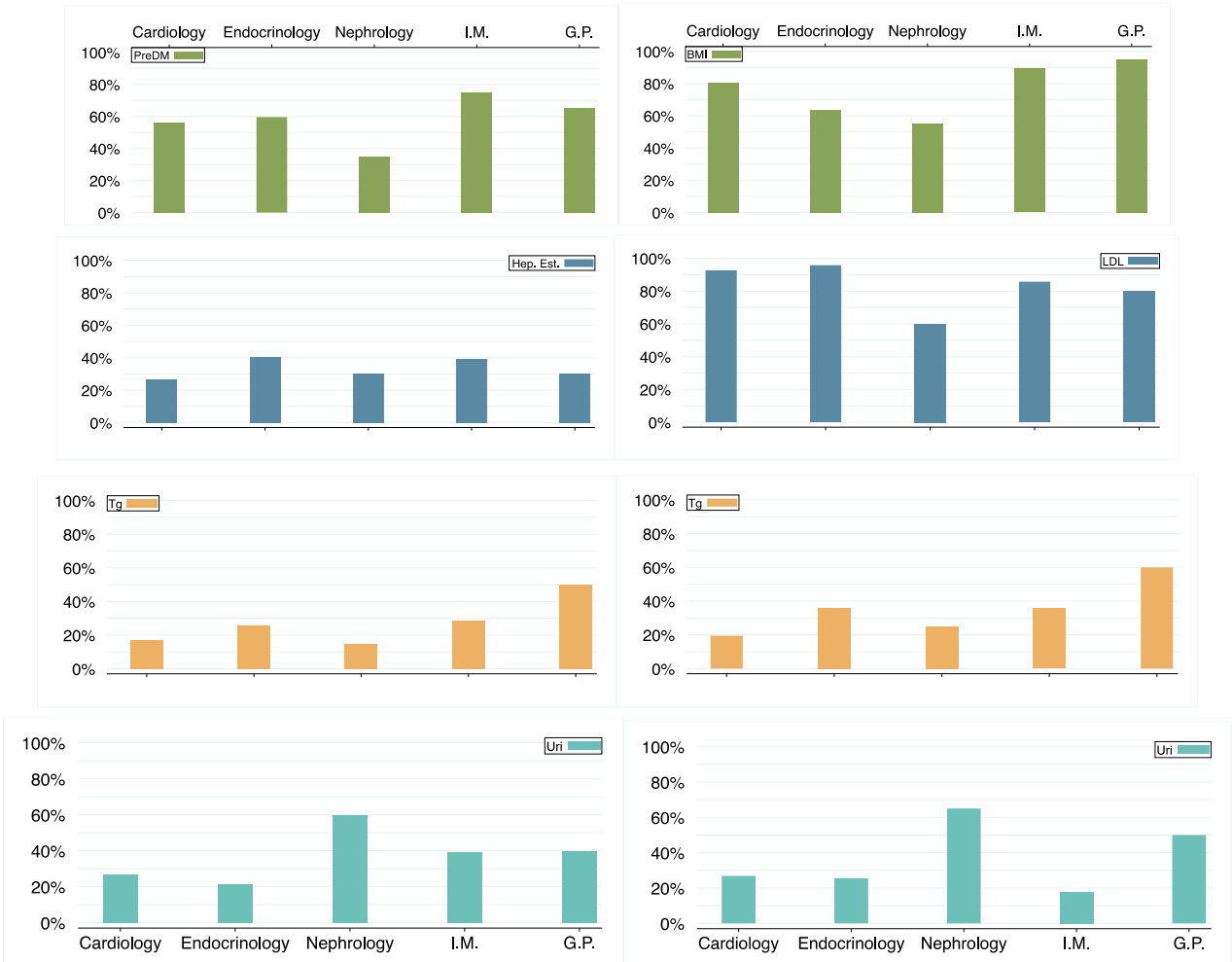
Table 3: Statistical comparisons amongst medical specialties assessment on CV risk factors in patients without T2D.

The CV risk factors considered as "very important" for >90% of respondents amongst each specialty are shown in **Table 4**. When responding about patients with T2D, the risk factor that was present across all five specialties was arterial blood pressure ≥140/90 mmHg (RF2), followed by smoking (RF14), present in four specialties. Likewise, when responding on patients without T2D, no risk factors was present across all specialties; however, smoking was present in three specialties. Of note, no "very important" risk factor with >90% of agreement was found amongst general physicians.

	With DM	**Without DM**
Cardiology	HBP / Smoking (98%) High LDL-c (93%)	Smoking (93%)
Endocrinology	Smoking (98%) HBP / LDL-c (96%)	HBP / Smoking (94%)
Nephrology	HBP / Albuminuria (95%)	Albuminuria (90%)
Int. medicine	HBP / Albuminuria / Smoking (93%)	Smoking (93%)
Gen. physician	BMI >= 30/ HBP / HbA1c (95%) GFR / Smoking (90%)	None

Table 4: Most agreed (≥90%)"very important" CV risk factor amongst medical specialties in patients with and without T2D.

The variation of the "very important" category percentages amongst the risk factors with statistical significant differences between specialties are shown in **Graphic 1**. For patients with T2D, the biggest difference was found in hyperuricemia, where 18% of internists considered it as a very important CV risk factor, as opposed to nephrologists, where 65% considered it as very important, entailing a 47% difference. This was followed by a difference of 41% between cardiologists (19%) and general physicians (60%) on triglycerides ≥ 150 mg/dL, and a difference of 40% between nephrologists (55%) and general physicians (95%) on BMI ≥30. For patients without T2D, the biggest difference was found in pre diabetes, where 75% of internists considered it as a very important risk factor, as opposed to nephrologists, where 35% considered it as very important, entailing a 40% difference. This was followed by a difference of 39% between endocrinologists (21%) and nephrologists (60%) on hyperuricemia, and a difference of 35% between nephrologists (15%) and internists (50%) on triglycerides ≥ 150 mg/dL.



Graphic 1: CV risk factors with statistical significant differences amongst specialties on patients with T2D (left) and in patients without T2D (right). Variation of "Very important" percentage

Finally, when answering about patients with T2D, the risk factors with >10% agreement across all specialties that were considered to be of low importance were triglycerides ≥150 mg/dL (14%) and hyperuricemia (11%). Similarly, when responding about patients without T2D, the risk factors were triglycerides ≥150 mg/dL (20%), hyperuricemia (13%), male sex (15%) and hepatic steatosis (10%).

Discussion

It is a fact that independently of the medical specialty, physicians need to treat patients with T2D. Endocrinologists and diabetologists are classically the responsible to lead these patients management. However, since the growing prevalence of T2D in Peru, the affected patients are receiving assistance by internists and mostly by primary care physicians. On the other hand, since the principal cause of mortality in diabetic population is CVD **[13]** it is imperative to prioritize therapeutic decisions based in prevention and management of CV risk factors **[14]**. Within this context, both cardiologists and nephrologists are more familiarized with modern antidiabetics that offer CV **[15]** and renal benefits **[16]** in patients with T2D. This would rebound in a more comprehensive and interdisciplinary management.

Recent guidelines for T2D management, are directing physicians to stratify the patient, as presenting moderate, high or very high risk to present a CV event. In this manner, if the patient we treat presents a very high CV risk, both GLP-1 receptor agonists and SGLT2 inhibitors, should be included in his or her therapy **[17]**.

Based in evidence, some risk factors are well recognized as traditional and very important in patients with T2D, that is why the guidelines have recommended their management. It is the case of LDL cholesterol (LDL-c) levels and hypertension **[18]**. Others have been recently mentioned and have a physiopathological base, because their presence is deleterious, it is the case of non-alcoholic steatohepatitis (NASH) **[19, 20]**. Some others to be considered are hypertriglyceridemia and hyperuricemia **[21, 22]**.

There are well known conditions that frequently affect patients with T2D, that unfortunately are not detected promptly, despite they are associated with a great elevation of CV risk: albuminuria and reduction of glomerular filtration rate **[23, 24]**.

It is interesting to see on Table 4 that more than 90% of surveyed physicians, coincide that hypertension is a very important CV risk factor for T2D patients, but not for the patient without diabetes.

No doubt LDL-c is a common CV risk factor recognized for all kind of population **[25]**. However, its value was classified as very important CV risk in patients with T2D by cardiologists and endocrinologists, while in patients without T2D it was surpassed by other risk factors, for example smoking.

The fact that LDL-c was pointed out as a very important CV risk factor only in population with T2D, maybe associated with the prolific information about the negative impact of this lipoprotein, and that its value should be as low as possible in these patients. In non-diabetic population we might underestimate the impact of LDL-c levels. In fact, in the non-diabetic population, physicians tend to give more importance to the therapeutic changes of lifestyle in order to reduce LDL-C levels than to give pharmacologic therapy. Also, physicians frequently use CV risk scores like Framinghan´s **[26]**.

It is remarkable that smoking has been identified as a very important CV risk factor, in people with and without T2D. This is curious because in Peru, smoking is not that frequent, if compared with other countries **[27]**; however, it is undoubtful that smokers have a notable increase on their CV risk.

Endocrinologists as well as cardiologists coincide in giving the same importance to the traditional CV risk factors, as hypertension, LDL-c and smoking. This could be associated to the concept that these two specialties share: that patients with T2D presents a metabolic disease with a great impact on CV risk and that T2D is a cardiometabolic disease **[28]**.

Nevertheless, these specialists do not give the same value to LDL-c levels when it comes to non-diabetic patients. This fact is surprising regarding cardiologists, because they are the ones who receive the majority of patients with hypercholesterolemia, since general population associate CV disease more with high cholesterol than with metabolic disturbances. Equally, it is striking that endocrinologists did not give due importance to obesity as a CV risk, maybe it has been replaced by abdominal obesity **[29]**, when in fact both are important and independent CV risks. This fact could be important in certain ethnic groups, as Asian descendants, whose weight could be normal but they could present a large abdominal circumference **[30]**.

It is possible that the nephrologists tend to value microalbuminuria as a very important CV risk factor, since it has been demonstrated that microalbuminuria notably increases CV mortality **[31]**. In this sense it is understandable that hypertension and albuminuria were the CV more relevant risk factors for the nephrologists; for these specialists both risk factors are the most important to treat in order to decrease the progression to chronic renal failure **[32]**.

In patients with T2D some CV risk factors, were assessed with some discrepancies between different specialties (graphic 1), that is the case of obesity and LDL-c levels to which nephrologists gave the lower value compared with the other specialists. The opposite happened when we see hyperuricemia that was considered more valuable for nephrologists than for the other specialists for patients with and without T2D. Maybe an explanation is that in people with chronic renal disease, lipid lowering therapies use has not shown benefit regarding deterioration of renal function and even more if the patient needs in dialysis **[33]**.

It is very interesting to observe that hypertriglyceridemia is considered as a very important CV risk factor for patients with and without T2D, only by primary care physicians, and not by the specialists. This could explain the potential indication of fibrates, alone or in combination with statins, by general practitioners, both for patients with and without T2D **[34]**.

This survey has showed the heterogenicity of the CV risk factors assessment between specialists and non-specialists, and it puts in evidence the bias that may exist between different specialists when it comes to efficiently classify CV risk in the T2D patient **[35]**, with the dangerous possibility of underestimate deleterious risk factors or overestimate minor or controversial risk factors. Probably there´s a lack of regional consensus to define the correct tools to assess CV risk in patients with and without T2D.

These findings could raise concern, especially in the ones who treat T2D patients, because it would be desirable that all the physicians that are involved in diabetes care, should share the same vision and perspective, so the patient could be evaluated and treated according to his or her real needs. The most important CV risk factors, that means, the ones that have more evidence to increment coronary and cerebrovascular disease, should be treated properly.

One of the limitations of this study is the small number of specialists surveyed, which in most cases comprises 10 % of the total existing number in Peru. We recommend to execute a bigger study that involve a larger number of physicians, and also to register more data about them: their age, time of specialization and if they work for private or public institutions. And lastly if they have, or not, access to continue medical education.

In summary, these results can make us reflect on whether we are really following the recommended guidelines for the stratification of our patients with T2D or with high CV risk in general and, on the other hand, ask ourselves if we maintain fluid communication between the various specialties that treat this group of patients with some regularity.

Conclusion

Hypertension and smoking were the most important CV risk factors for T2D patients valued by the physicians who answered the questionnaire, followed by levels of LDL-c and albuminuria. Cardiologists as well as endocrinologists, give the same assessment to the CV risk factors. For people without T2D, smoking was recognized as the most important CV risk factor, followed by hypertension and albuminuria. This survey conducted among different medical specialists, that frequently treat patients with high CV risk, as T2D patients, showed us that the given assessment to CV risk factors is very heterogeneous. However, there were several coincidences, like the ones found between endocrinologists and cardiologists, and there were differences like the nephrologists appreciations. These results may help to correct the treatment goals of our patients, optimizing the pharmaceutical options we have and improving the communication between the different specialties involved on patients care.

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