

Use of ICTs to assess the Risk of Diabetes in Educational Personnel: A Case Study

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Abstract

Introduction: Type 2 diabetes mellitus today is one of the diseases that is currently seen at high levels and that increasingly the risk of suffering from it is increasing.

Objective: to determine The use of ICTs to assess the risk of diabetes in teachers of an educational institution in North Lima.

Methods: a quantitative, descriptive-transversal study, with a total population of 140 who answered a questionnaire of sociodemographic data and the diabetes mellitus risk test.

Results: 20.6% (n=21) have a minimal risk of diabetes mellitus, 24.5% (n=25) slightly elevated risks, 31.4% (n=32) moderate risk, 14.7% (n=15) elevated risk and 8.8% (n=9) extremely elevated risk.

Conclusions: the lifestyle should be modified to a more affordable one, which allows the adaptability of healthier eating behaviors that allow good health..

Keywords: Risk, Diabetes mellitus type 2, Public health, Primary health care.

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1. Introduction

In recent years, the number of individuals with diabetes has increased, around 422 million people and 1.6 million deaths per year have been recorded [1]. A global increase in unhealthy lifestyles, an aging population, and rising rates of obesity among adults and children may partially explain the diabetes pandemic. In addition, because of economic development and urbanization, the incidence of diabetes is increasing rapidly in developing countries [2]. Type 2 diabetes mellitus (T2DM) is a chronic disease known as a metabolic disorder caused by insufficient

insulin secretion produced by the pancreas, characterized by the presence of high blood glucose values [3]. DM2 is also characterized by symptoms such as polyuria, increased appetite and thirst, extreme tiredness, blurred vision, weight loss and numbness [4][5].

On the other hand, the risk of DM2 are those potential factors that contribute negatively to the development of DM2, these aspects are usually associated with the lifestyle of the user; Also, within these risk factors are age, sex and family history, which are elements that increase the probability of the onset of this disease [6][7]. T2DM usually develops in adults and has been linked to obesity, physical inactivity, and unhealthy eating habits;

This is associated with an increased risk of cardiovascular disease [8].

T2DM and its complications represent a health burden in all countries and to date there are no effective measures to control this disease [9]. A substantial portion of the health burden of diabetes can be attributed to diabetes-related macrovascular and microvascular complications, such as coronary heart disease, stroke, peripheral artery disease, heart failure, diabetic retinopathy, and cardiac autonomic neuropathy. Cardiovascular disease (CVD) represents the main cause of morbidity and mortality in subjects with DM2 [10] [11].

Risk factors are of two types; The non-modifiable ones are those that cannot be changed, such as sex, age, and genetics; while the modifiable ones are those that can be modified such as lifestyle, harmful habits, sedentary lifestyle, among others [12] [13].

However, in order to collect and manage information about users at risk of diabetes, the use of information and communication technologies (ICTs) have an important role in assessing the risk of diabetes [14], since ICTs allow us to know about the habits made by the user, in addition to identifying which indicators cause that risk, In addition to allowing constant monitoring of health in the user, since their health status is registered in addition to receiving alerts about possible risks [15].

In a study conducted in Colombia, they developed a study on modifiable factors and DM2 in people, made up of 362 people. Applied the questionnaire FINDRISC. In their results they mention that they obtained moderate to elevated risk with a score ≥ 12 . They concluded that the risk was elevated due to the lack of consequences of the elderly for compliance with their treatment [16].

In a study conducted in Ecuador, they developed a work on the risk assessment of DM2, which was made up of 60 14 participants. They used the FINDRISC test and in their findings, they pointed out that 485 obtained an insignificant risk level. They conclude that they should employ preventive strategies and measures to mitigate the risk of T2DM [17].

A study in Turkey identified that 378 people with T2DM came to the endocrinology consultation and outpatient department of a public hospital, the levels of diabetes self-management of people with T2DM during the COVID-19 pandemic were found to be low. Being male, over 65 years old, married, diagnosed with diabetes between 6 and 11 years old, increased smoking, COVID-19 pandemic, reduced physical activity and support from health personnel, increased anxiety and stressed levels were determined to be risk factors affecting diabetes self-management [18].

Therefore, the research objective was to determine the Use of ICTs to assess the risk of diabetes in teachers of an educational institution in North Lima.

2. Methods

A. Research type and Design

In the study, according to its properties is quantitative, with respect to its methodology is descriptive-transversal non-experimental [19].

B. Population

The population is made up of a total of 140 inhabitants of a human settlement in the district of Carabayllo.

C. Inclusion Criteria

- Teachers of Regular Basic Education who are over 18 years of age and older.
- Settlers residing more than 6 months in the human settlement.
- Teachers of Regular Basic Education who voluntarily agree to participate in the study.

D. Technique and Instrument

The technique for data collection was the survey, in which sociodemographic aspects and the FINDRISK Test are written.

The FINDRISK test is an instrument that evaluates the risk of diabetes mellitus in the next 10 years, which is made up of 8 dimensions (age, BMI, abdominal circumference, physical activity, consumption of fruits and vegetables, BP measurement, glucose values and family antecedents of diabetes mellitus. In which it is evaluated by a Likert scale both polytomous and dichotomous according to each dimension, where the score is: "<7 is low", from 7 to 11 slightly elevated, "12 to 14 moderate", "15 to 20 high" and ">20 is very high" [20] [21].

Regarding the validation of the instrument, it was done by the Kaiser Mayer-Olkin sample adequacy test was a coefficient of 0.643 ($KMO > 0.5$) and the Bartlett sphericity test with significant results of (X^2 approx. = 111.282; $gl = 28$; $p = 0.000$).

Finally, the Cronbach's alpha reliability test was performed, where a result of 0.82 ($\alpha < 0.7$) was obtained, making the instrument dependable for the study.

E. Place and Application of the Instrument

Prior coordination was made with the leaders of the human settlement to be able to conduct the study, in turn, they were given the necessary knowledge about the research and thus be informed of what is going to be done.

3. Results

In Figure 1, we can see that 20.6% of the participants have an insignificant risk of diabetes mellitus, 24.5% have a slightly elevated risk, 31.4% moderate risk, 14.7% elevated risk and 8.8% extremely elevated risk.

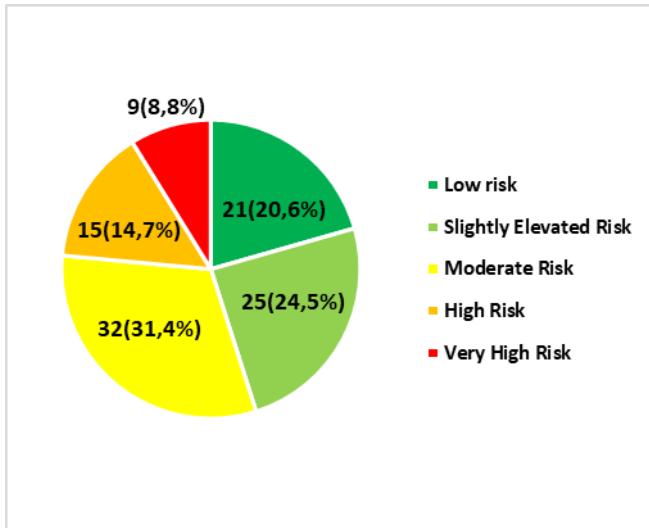


Figure 1. Risk of diabetes mellitus in teachers of an educational institution in North Lima.

In Figure 2, we can see in the age dimension that, 44.1% of the participants are under 45 years of age and are more prone to the risk of contracting diabetes mellitus, 39.2% are between 45 and 54 years old and are at moderate risk of contracting diabetes mellitus and 16.7% are between the ages of 55 to 64 years do not suffer from a high risk of contracting diabetes mellitus.

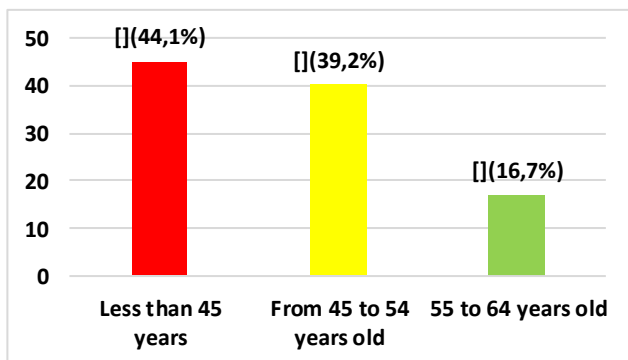


Figure 2. Risk of diabetes mellitus in relation to age in teachers of an educational institution in North Lima.

In Figure 3, with respect to BMI, we can see that 27.5% of the participants have less than 25 kg/m², 40.2% have 25 to 30 kg/m² and 32.4% have more than 30kg/m².

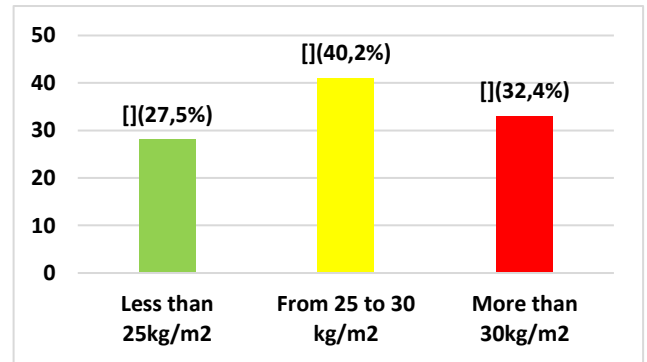


Figure 3. Risk of diabetes mellitus in relation to body mass index (BMI) in teachers of an educational institution in North Lima.

Figure 4, regarding the anthropometry dimension and waist or abdominal circumference, it is observed that 25.5% of the participants have <94 cm in H or <80 cm in M, 28.4% are between 94-102 cm in H or 80-88cm in M and 46.1% >102 cm in H or >88 cm in M.

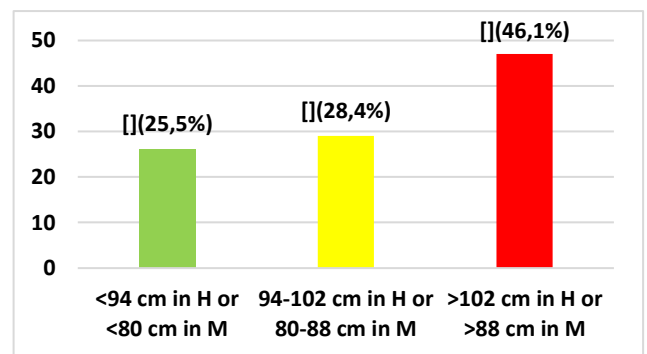


Figure 4. Risk of diabetes mellitus in relation to waist anthropometry or abdominal circumference in teachers of an educational institution in North Lima.

In Figure 5, we can see with respect to the physical activity dimension that, 37.3% of the participants perform at least 30 min of physical activity and 62.7% perform less than 30 min or no physical activity.

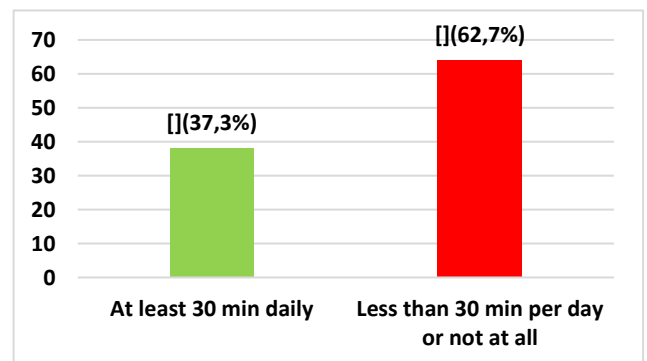


Figure 5. Risk of diabetes mellitus in relation to physical activity in teachers of an educational institution in North Lima.

In Figure 6, with respect to the dimension daily intake of fruits and vegetables, 42.2% of the participants do make the daily intake of fruits and vegetables; and 57.8% do not.

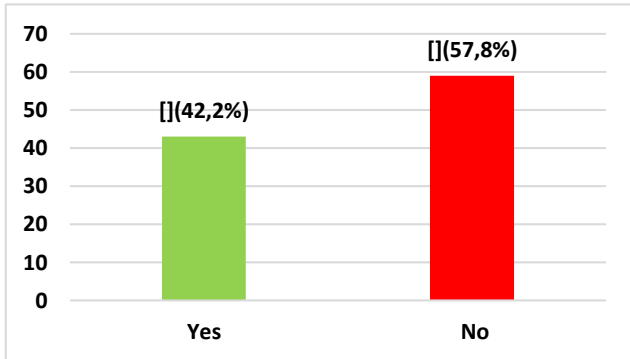


Figure 6. Risk of diabetes mellitus in relation to the daily intake of fruits and vegetables in teachers of an educational institution in North Lima.

In Figure 7, it is observed with respect to the dimension arterial hypertension that, 42.2% of the participants do have arterial hypertension and 57.8% do not have arterial hypertension.

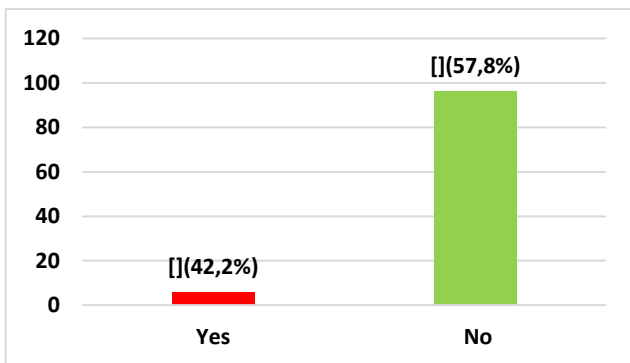


Figure 7. Risk of diabetes mellitus in relation to hypertension in teachers of an educational institution in North Lima.

In Figure 8, high glucose values are observed with respect to the dimension, 28.4% if they have high glucose levels and 71.6% do not have high glucose levels.

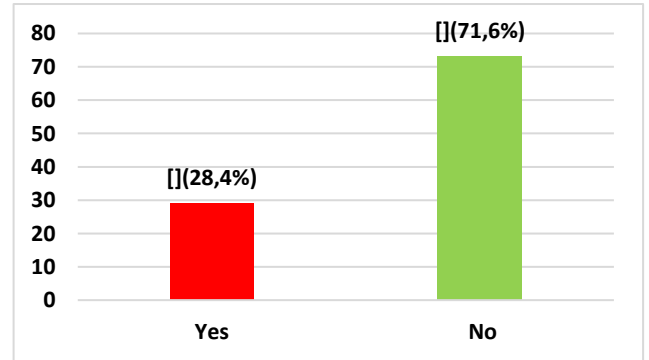


Figure 8. Risk of diabetes mellitus in relation to high glucose values in teachers of an educational institution in North Lima.

Figure 9 shows with respect to the antecedent's dimension that 29.4% of the participants have no history of diabetes mellitus, 32.4% if they have a family history of grandparents, uncles and first cousins of diabetes mellitus; and 38.2% also have a family history of diabetes mellitus by parents, siblings, and children.

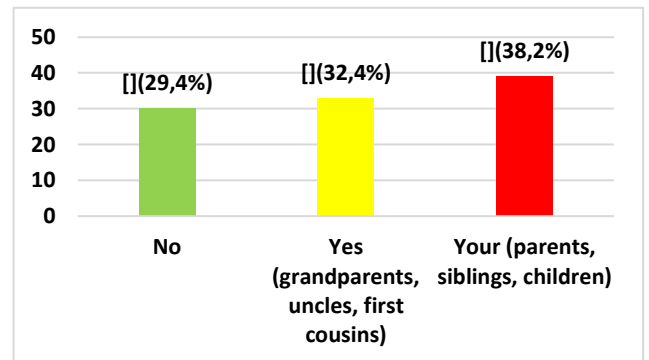


Figure 9. Risk of diabetes mellitus in relation to the history of diabetes in teachers of an educational institution in North Lima.

4. Discussion

Type 2 diabetes mellitus is a global health problem [22-25]. The number of people with diabetes is increasing and the largest increase will occur in low- and middle-income regions because of population ageing, growth, and urbanization [26-31].

Regarding the results of the risk of diabetes mellitus, it was observed that they are between moderately and slightly high risk of diabetes mellitus, we can interpret that, due to the bad lifestyles that induce the risk of suffering from DM2 [32-36], given that the morbidity and mortality of this disease is increasingly high, given that the same people do not perform self-care necessary to allow them to have good health through an adequate nutrition, physical activities, the reduction of sugar consumption and in addition to reducing alcohol consumption, all this allows the person to reduce the risk

of suffering from DM2, although many of the people ignore the preventive and promotional counseling provided by health professionals, and given this, increase their risk rates of suffering from the disease [37-42].

Regarding dimensions, we observed that most of the people in the study are prone to the risk of suffering from DM2 [43-49]; At present, this disease increasingly affects the young population under 45 years of age and that this is one of the prioritized problems in which health professionals carry out preventive and promotional measures to reduce the cases that are increasingly increasing, since it has become a public and social health problem [50-56].

At this point we can recognize the risks that can lead to a non-communicable disease such as DM2 and be induced in the most vulnerable inhabitants due to lack of guidance and preventive health counseling, and limiting working hours in which they are not allowed to change or modify their lifestyle habits [57-61]. Likewise, the information obtained in this study contributes to the reference framework on the risk of DM2, thus laying the practical foundations of evidence-based nursing and strategy of significant importance to guarantee a better lifestyle and quality of life in society [62-65].

The progression from prediabetes to type 2 diabetes can be prevented by favorable lifestyle interventions [66-69]. However, initiating and maintaining healthy lifestyle changes remains a challenge. The rapidly increasing prevalence of the disease is largely related to lifestyle factors associated with being overweight, including changes in eating habits and increased sedentary lifestyle.

5. Conclusions

It is concluded that a comprehensive preventive promotional health program should be conducted, which keeps people informed about the control, prevention, and treatment of DM2 and for people who suffer from its what measures to take to keep it adequate and avoid its complications.

It is concluded that, the modification of the lifestyle to a healthy one, allowing the adoption of eating behaviors that allow to keep their sugar levels stable and thus reduce the risks of DM2 and in turn generate good health in the person.

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