

Incidence of Obesity and Hypertension among Hyatt Employees in Aruba, 2012

KP Ali¹, AK Dosaj², NP Dyal³

ABSTRACT

Objective: Obesity and hypertension, which are associated with cardiovascular disease and Type 2 Diabetes Mellitus (DM), have become a major health concern in Aruba. The present study was aimed to determine the incidence of obesity and potential hypertension among Hyatt employees in Oranjestad, Aruba.

Method: On November 9, 2012, students from the Xavier University School of Medicine, Aruba, conducted a health fair for the employees of the Hyatt Hotel in Aruba – one of the largest hotels in the capital city of Oranjestad. The Medical students collected the information through questionnaire-based survey and physical examinations. This cross-sectional study measured the weight, height, random blood glucose, systolic and diastolic blood pressures of the participants.

Results: One hundred and fourteen individuals (19%) participated out of the 509 Hyatt employees. Obesity, hypertensive readings and potential diabetes or pre-diabetes was noted among the majority of the participants; and 46% (52/114) of the respondents were overweight and 37% (43/114) were obese. Hypertensive BPs were detected in 33% (38/114) of the participants. Students' t-test showed no significant correlation between the subjects' gender and the following variables: BMI, random blood glucose, systolic/diastolic blood pressure, and the hypertensive findings. Based on the random blood sugar readings, 4/114 individuals were at risk for diabetes. The four individuals had a random blood sugar reading of 11.1 mmol/L or higher.

Conclusion: Many of the participants in this study, presented with both obesity and possible hypertension. It is logical to expect a significant risk for cardiovascular disease and Type 2 DM in the participants' population.

Keywords: Aruba, Caribbean, diabetes, hypertension, incidence

Incidencia de la Obesidad y la Hipertensión entre los Empleados de Hyatt en Aruba, 2012

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RESUMEN

Objetivo: La obesidad y la hipertensión, asociadas con las enfermedades cardiovasculares y la diabetes mellitus tipo 2 (DM), se han convertido en un importante problema de salud en Aruba. El presente estudio tuvo por objetivo determinar la incidencia de la obesidad y la hipertensión potencial entre los empleados de Hyatt en Oranjestad, Aruba.

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Método: El 9 de noviembre de 2012, estudiantes de la Escuela de Medicina de la Universidad Xavier, Aruba, realizaron una feria de salud para los empleados del Hotel Hyatt en Aruba – uno de los hoteles más grandes de la ciudad Oranjestad, la capital del país. Los estudiantes recopilaron la información mediante encuestas basadas en cuestionarios y exámenes físicos. Este estudio transversal midió el peso, la altura, la glucosa en sangre aleatoria, y la presión arterial sistólica y diastólica de los participantes.

Resultados: De los 509 empleados de Hyatt, ciento catorce individuos (19%) participaron en el estudio. Obesidad, lecturas hipertensivas y diabetes potencial o prediabetes se observaron entre la mayoría de los participantes. El 46% (52/114) de los encuestados tenían sobrepeso y el 37% (43/114) eran obesos. Se detectó PA hipertensa en 33% (38/114) de los participantes. La prueba *t* de Student no mostró ninguna correlación significativa entre el género de los sujetos y las siguientes variables: IMC, glucosa en sangre aleatoria, presión arterial sistólica/diastólica, y los hallazgos de hipertensión. De acuerdo con las lecturas de azúcar en sangre aleatoria, 4/114 individuos corrían riesgo de padecer diabetes. Los cuatro individuos tenían una lectura de azúcar en sangre aleatoria de 11.1 mmol/L, o más.

Conclusión: Muchos de los participantes en este estudio, presentaban obesidad y posible hipertensión. Es lógico esperar un riesgo significativo de enfermedad cardiovascular y DM tipo 2 en la población de participantes.

Palabras clave: Aruba, Caribe, diabetes, hipertensión, incidencia

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INTRODUCTION

Obesity and hypertension are significant public health concerns and are risk factors for developing Type 2 Diabetes Mellitus (DM) and cardiovascular diseases. There have only been a few studies focussed on this emerging public health concern in the islands of the Netherlands Antilles. A study was conducted among school children in Bonaire, Netherlands Antilles (1). Significant prevalence of being overweight (17%) and obesity (12%) were found amongst these children. The levels of hypertension amongst the obese children was 53% and amongst overweight children, 23% (1). During the present time, the island of Bonaire is a special municipality of the Netherlands. In May 2008, the Special Committee on Obesity of the Aruban Parliament was established to help battle this crisis. According to the Department of Public Health, the prevalence of overweight amongst the adults in Aruba is 77%. In the year 2006, 82.8% of the male adults (aged 24–65 years), were overweight, while 72.1% of the females aged 24–65 years were overweight (2). To help develop a more complete understanding of these significant health concerns and their prevalence in Aruba, students of Xavier University School of Medicine in Aruba collected health metrics during school-sponsored and Family Medicine Interest Group (FMIG) run health

fairs. This study presents the data collected during one of these health fairs conducted among the employees of the Hyatt hotel chain in Aruba, Kingdom of the Netherlands on November 9, 2012.

The article published by Sowers *et al* highlighted the crucial role that hypertension and diabetes play with regard to cardiovascular diseases. A strong correlation was recorded between diabetes and hypertension, with hypertension being approximately “twice as frequent” in diabetic patients than among those without diabetes (3). The review published by Sowers *et al* emphasized the correlation using the data provided by the Captopril Prevention Programme (CAPPP) and Hope Trial which examined the risk factors which might lead to cardiovascular diseases (3). Furthermore, other studies have concluded that “diabetes is a cardiovascular disease” (4). The fundamental conclusion of these studies is that cardiovascular disease has a direct correlation with hypertension and diabetes. The present study was aimed to determine the incidence of co-morbid obesity and possible hypertension among Hyatt employees in Oranjestad, Aruba.

SUBJECTS AND METHODS

All the employees of the Hyatt hotel in Aruba were instructed to attend the health fair held on November 9,

2012. They completed a survey questionnaire and underwent a series of medical examinations. Their age, gender, marital status, number of children/dependents, weight, height, blood pressures and random blood sugar samples were recorded. The participants were not required to fill in all the details or undergo all the exams and no personally identifiable information was collected. All the participants were above the legal age of consent in Aruba. There were 114 participants in the study out of the 590 employees working at Hyatt. Thus, 19% of the employees participated in this study.

The students measured the participants' blood pressure with standard school supplied mercury sphygmomanometers, administered the finger stick blood test to measure their blood glucose with One Touch Ultra 2 glucose meters, and measured their height, using the standard measuring tape. Their weights were noted using weighing scales – their heights and weights were used to calculate their body mass index (BMI) using the National Heart, Lung and Blood Institute BMI charts (5). The results were compiled and analysed using the Statistical Package for Social Sciences (SPSS) Version 20 for Windows. Students' *t*-test was used to determine any association between the subjects' gender and the following parameters: BMI, random blood glucose, systolic/diastolic blood pressure and hypertension.

RESULTS

All the 114 participants underwent a random blood sugar test. Their mean blood sugar level was 6 mmol/L. Seven participants (6%) had a value between 7.8 and 11 mmol/L which was considered pre-diabetic, while four participants (4%) had a random blood sugar above 11.1 mmol/L, which was considered diabetic.

Body mass index is a measure of body fat based upon height and weight. A BMI below 18.5 is underweight, and there was none in our sample. The normal BMI is between 18.5 and 24.9. A BMI between 25 and 29.9 is considered to be overweight. And a BMI above 30 is considered to be obese. The mean BMI of this sample was 29. Of the 114 participants, 43 (38%) were obese and 52 (46%) were overweight.

The participants' mean systolic blood pressure was 125 mm Hg. Their mean diastolic blood pressure was 83 mm Hg. Figure 2 shows the distribution of blood pressure *versus* age of the respondents. In this sample, 33% (38/115) of the participants had blood pressures above 140 mm Hg systolic and/or above 90 mm Hg diastolic.

In this sample, 12% (14/114) of the participants were overweight and hypertensive. Similarly, 18% (21/114) of them were obese and potentially hypertensive. Only three participants who exhibited high blood pressure readings were neither overweight nor obese.

No significant correlations were found between the participants' gender and BMI, assuming equal variances, *p*-value [0.256] Table 1. There was no difference between the males and females with regard to systolic blood pressure (*p* = 0.185) or diastolic pressure (*p* = 0.420).

The mean systolic blood pressure for the men was 127.9 ± 15.5 mm Hg. The mean systolic blood pressure for the women was 123.8 ± 16.2 mm Hg. The mean diastolic blood pressure for the men and women, was 84.1 ± 11.2 and 82.2 ± 12.3 mm Hg.

DISCUSSION

Approximately 10% of this study's sample was at risk of or was already suffering from diabetes mellitus. A random blood sugar above 11.1 mmol/L is considered

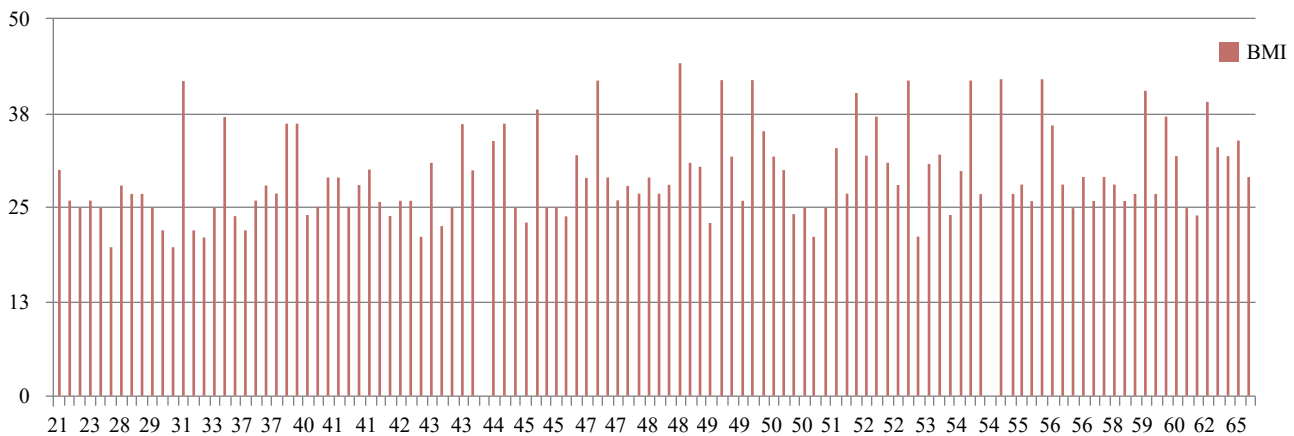


Fig 1: Age vs BMI

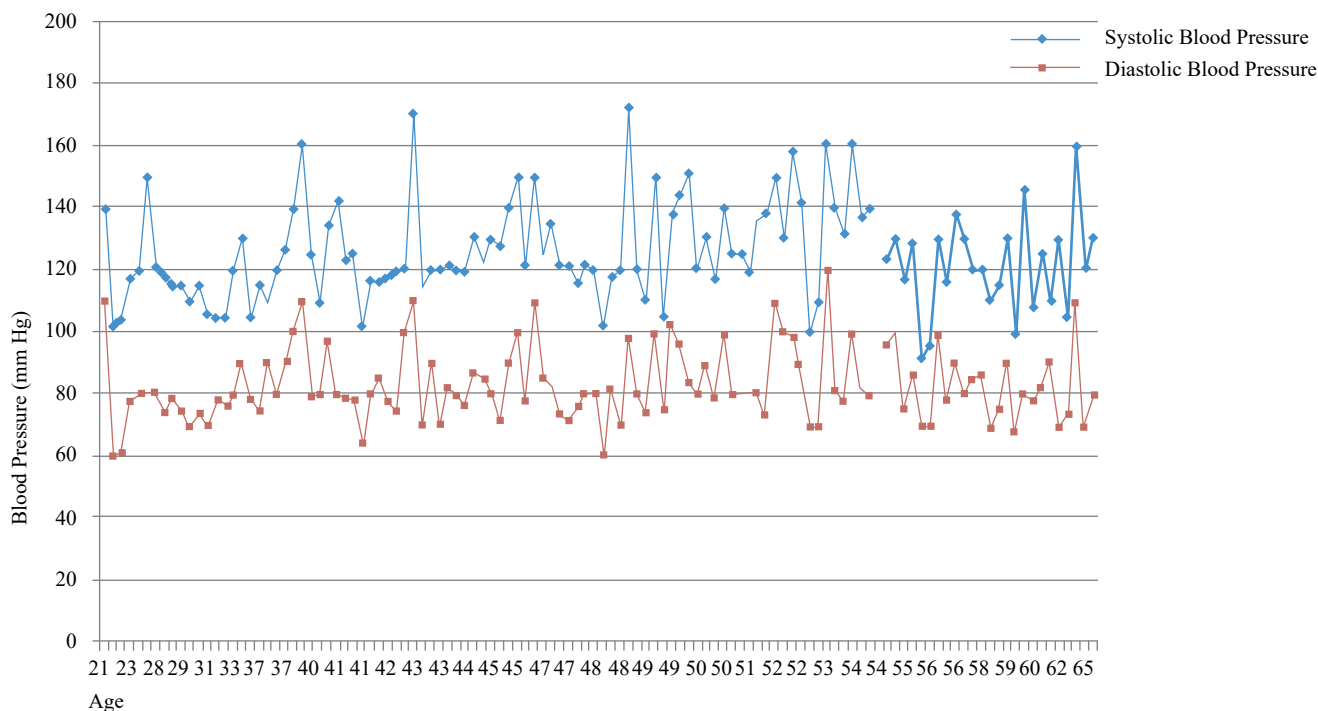


Fig 2: Age versus systolic and diastolic blood pressures

Table 1: Body mass index and blood pressure among the male and female participants.

	Gender	Mean	Standard Deviation	Sig. (2-tailed)
Systolic blood pressure	Male	127.9	15.5	0.185
	Female	123.8	16.2	
Diastolic blood pressure	Male	84.1	11.2	0.420
	Female	82.2	12.3	
Body mass index	Male	28.5	4.5	0.256
	Female	29.8	6.5	

at high risk for diabetes, which accounted for 4% of this sample's diabetes, 6% of this sample had blood sugars between 7.8 and 11 mmol/L, considered pre-diabetic. However, it must be noted that fasting blood sugar test is the gold standard for the diagnosis of diabetes.

The participants' mean BMI was 29, which was overweight and very close to obesity (30). In this study's sample, 38% of the subjects, were obese and 46% of the subjects, were overweight.

In this sample, 12% (14/114) of the subjects, were both overweight and hypertensive, while 18% (21/114) of them were both hypertensive and obese. It must again be noted that just one reading of blood pressure is not sufficient for a diagnosis of hypertension. The standard to declare hypertension is the systolic blood pressure above 140 mm Hg and/or the diastolic blood pressure above 90 mm Hg, across three separate readings on three separate occasions. Further, this data's validity must be

taken into consideration that the participant's use of blood pressure medication was not collected.

No significant correlations were found between their gender and the parameters of BMI, systolic/diastolic blood pressures and hypertensive levels.

This is a fairly localized sample (one hotel) and a small sample size. These results may not be generalizable to the Aruban public. There have been other health fairs that were conducted and information is being collected but to date no data had been published.

CONCLUSION

This was a small-scale study on a localized sample and it showed significant health concerns of obesity, diabetes mellitus and hypertension mandating further study and analyses. This study's sample exhibited significant risks for cardiovascular diseases and Type 2 Diabetes Mellitus and 83% of the participants were overweight or obese, and 10% were at risk of diabetes or being diabetic.

Future studies should be conducted to assess if similar levels of risk exist in the general population. All future health fairs should continue this surveillance and provide the results for dissemination to journals and appropriate public health authorities. The majority of the participants exhibited the risk factors of obesity, hypertension and potential diabetes or pre-diabetes. We found that 46% (52/114) of the sample was overweight,

and 37% (43/114) of the subjects were obese. High blood pressures were detected in 33% (38/1150) of the participants. The student's *t*-test revealed no significant correlation between the subjects' gender and the following variables: their BMI, random blood glucose, systolic/diastolic blood pressure or levels of suspected hypertension.

AUTHORS' NOTE

The authors were not compensated or funded in any way for the preparation of this manuscript. This study has not been submitted elsewhere. We understand and agree that if the manuscript is accepted for publication, copyright in the article, including the right to reproduce the article in all forms and media, shall be assigned to the publisher.

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