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EFFECTS OF ARECA NUT AND ITS PRODUCTS ON BLOOD PRESSURE IN POPULATION OF NAWABSHAH SHAHEED BENAIRABAD.

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ABSTRACT

INTRODUCTION: Areca nut is consumed as a chewing material by around 600 million individuals around the world. It is assessed that 10 to 20% of the world's people use areca nut in different forms, regularly blended in betel quid **OBJECTIVES:** To determine the effects of areca nut and its products on Blood pressure. **MATERIAL & METHODS:** This case control study was carried out on community of Nawabshah, Shaheed Benazirabad. In this study 368 study subjects were included. Case group comprised of 184 study subjects regular users of areca nut and its products like pan, gutkha, supari and mainpuri. In other group 184 healthy controls were selected who were non users of areca nut or its products. Blood pressure of participants was measured by mercury sphygmomanometer by auscultatory method. **DURATION:** From Jan 2018 to Jun 2018. **PLACE:** Nawabshah Shaheed Benazirabad. **RESULT:** Total 368 subjects were selected in the study in which 226 were Males (61.42%), 142 were females (38.58%). Mean age of Case group areca nut users was 25.61±5.25 years, and mean age of control group non users was 26.62±5.17 years. In Case group areca nut users, Gutkha users were 64 (34.8%), pan users 47(25.5%), Supari users 43 (23.4%) and Mainpuri users 30 (16.3%). Systolic blood pressure was significantly increased in areca nuts and its products users as compare to control group. The systolic blood pressure was 126.34±11.14 mmHg in case group while in control group was found 118.67±12.49 mmHg with highly significant p-value 0.0001. Diastolic blood pressure is significantly increased in areca nuts and its products users as it was 84.7826±6.76 mmHg in case group as compare to control group 78.88±7.68 mmHg with highly significant p-value 0.0001. The frequency of hypertension was found more in case group areca nut and its products users as present in 28.80% of participants, as compare to 17.39% in control group. **CONCLUSION:** It is concluded that areca nuts and its products adversely affects blood pressure in such a way that it increases systolic blood pressure and diastolic blood pressure and hypertension was more prevalent in areca nut products users.

KEYWORDS: Areca Nut, Blood Pressure, Hypertension.

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INTRODUCTION

Cardiovascular diseases are the major cause of death worldwide. Diseases of cardiovascular

system (CVD) at present records for almost 50% of noncommunicable diseases (NCDs). The number of cases of NCDs now a days increased than communicable diseases, becoming the world's major health issue, among NCDs the heart diseases remaining the main worldwide reason for death and nearly 17.3 million deaths per year due to CVDs, a number that is expected to grow to 23.6 million by 2030[1]. There are many risk factors for developing cardiovascular diseases. Worldwide studies showed that chewing betel nut or areca nut is also a risk factor for cardiovascular diseases, Wen-Yuan Lin et al (2008) showed that areca nut chewing was associated with increase risk of CVD and mortality in Taiwanese men[2]. A study in Bangladesh by Heck JE et al (2011) gave stronger associations between areca nut and blood pressure among women and men, showing significantly increased Systolic blood pressure (SBP) from 118.5±14.3 mmHg in areca nut non chewer to 124.4±20.3 mmHg in betel nut chewers and Diastolic blood pressure (DBP) was increased from mean value of 75.8 mmHg in non chewers to 78.6 mmHg in betel nut chewers. The prevalence of hypertension in betel nut users was 20.5% and in non users was 11% in that study[3]. Areca nut also called betel nut is the 4th common psychostimulatory product around the globe after nicotine, caffeine, and alcohol[4]. Areca nut is chewing substance obtained from tropical palm tree Areca catechu[5]. Areca nut is consumed as a chewing material by around 600 million individuals around the world. It is assessed that 10 to 20% of the world's people use areca nut in different forms, regularly blended in betel quid (pan)[6]. The different products made from betel nut are the Supari, Mainpuri, Mawa, Ghutka and Paan Masala[7].It is chewed worldwide particularly in numerous Asian countries, including India, Pakistan, Bangladesh, Myanmar, Cambodia, Indonesia, Philippines, and Vietnam. The greatest using nation of areca nut is archived as India[8]. In Pakistani population prevalence of betel nut is very high among people living in cities. A study conducted in Karachi showed 40% prevalence of using areca nut in population[9,10]. The general frequency of betel made items among man was 50.3%, and in women was 28.5%. In Karachi a study on school going children was done, revealed that above 74% of students utilized areca nut on a day by day basis[11]. Blood pressure is important parameters to asses cardiovascular function, and areca nut products do influence blood pressure, as comparison of blood pressure of areca nut chewers and non chewers was studied by Heck JE et al (2011) in Bangladesh, and indicated that as compare to non users the persons who used pan had increased systolic blood pressure, diastolic blood pressure and pulse pressure. After controlling for other illustrative factors, chewing betel quid was related with hypertension[3]. In the study by Chin-Hsiao (2008) in Taiwani diabetic patients found that the frequency of hypertension among all age groups was higher in betel nut chewers[12].

MATERIAL & METHODS

This case control study was carried out in Nawabshah Shaheed Benazirabad from January 2018 to June 2018. Total 368 Study subjects were selected from the community of Nawabshah city. The sample size of 184 cases and 184 control were calculated through standard formula for case control study. All cases of regular users of areca nut or its products and also healthy controls were selected through convenient non probability sampling. The study approval was taken from ethical review committee of PUMHSW Shaheed Benazirabad. Verbal informed consent was taken from the willing participants. Young age physically active individuals from 18 to 35 yrs both male and female who were regular areca nut and its products users for more than 1 years were included in study. The persons having Congenital heart disease, Smokers, Obese, having Diabetes Mellitus, Hypertension or Sedentary life style were excluded. The blood pressure was recorded by ALPK2 sphygmomanometer model 300V Japan through appropriate size cuff. Systolic blood pressure labelled as appearance of korotokof sounds and diastolic blood pressure when korotokof sound muffles. Blood pressure was taken after 10 min rest and two readings were taken to avoid error. Hypertension was labelled when systolic blood pressure equal to 140 or more, or diastolic equal to 90 or above[13]. All the relavent information of study was documented on predesigned questionare by researcher himself. All data was entered in SPSS version 23.0 and was analyzed. Chi-square test was applied for Qualitative data, and for quantitative data independent t-test was used. Results are presented by tables.

RESULTS

Table.1: Age comparison in areca nut users and non users (n=368)

Total study subjects (n=368)	Areca nut and its products users (n=184)	Areca nut non user Control group (n=184)	P-value
Age(years)(Mean+ SD)	25.61±5.25	26.62±5.17	0.9

***P-value is significant < 0.05**

Table.2: Gender distribution of total study subjects(n=368)

Gender	Areca nut and its products users (n=184)	Areca nut non user Control group (n=184)
Male (226)	122	104
Female (142)	62	80
P-value	0.9	0.9

***P-value is significant < 0.05**

Fig.1: Different types of areca nut products used by Case group(n=184)

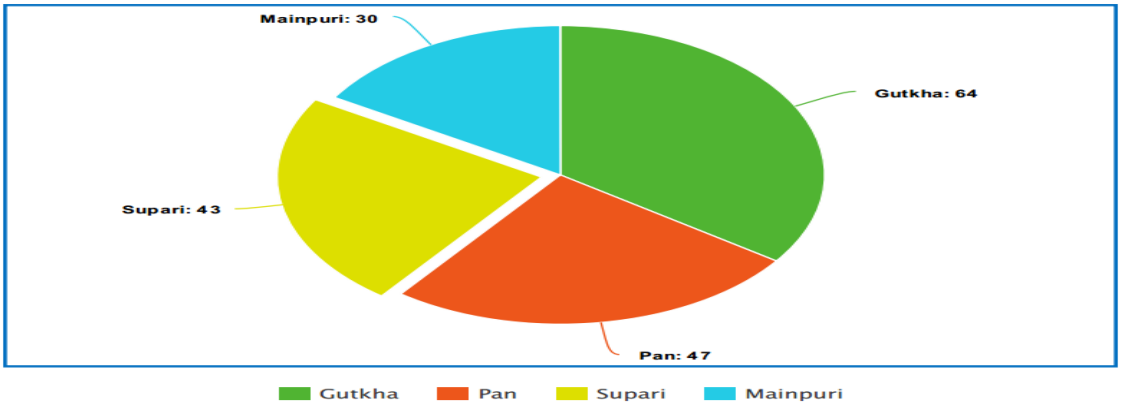

Table:3. Comparison of systolic and diastolic blood pressure among Case group and Control group

Parameters (n=368)	Areca nut and its products users (n=184)	Non users control group (n=184)	P-value
Systolic blood Pressure	127.53±11.86	118.67±12.49	0.0001
Diastolic blood Pressure	84.78±6.76	78.79±7.68	0.0001

Table.04: Comparison of Hypertension cases among areca nut users and non users. (n=368)

Parameters(n=368)	**Areca nut and its products Users (184)**	**Non usersm Control group (184)**	**P-value**
Normal Blood Pressure (No/percentage)	**131/(71.20%)**	**152/(82.61%)**	**0.01**
Hypertension Cases (No/percentage)	**53/(28.80%)**	**32/(17.39%)**	

DISCUSSION:

The history of areca nut chewing is centuries old. Areca nut in different form is utilized as a chewing product by roughly 600 millions individuals worldwide[6]. Different forms of areca nut like pan, gutkha, mainpuri and supari is used by 10 to 20% of the world's residents. The general effects of chewing areca are not just on the oral cavity but also on the general wellbeing of a person. However it exert deleterious effects when it becomes a habit. Sadly, the habit is becoming prominent among the younger individuals. In

Pakistan, the situation is graver than the west due to easy availability of these products. In such cases, it is extremely hard to limit the use, and it is mandatory to curb the habit[14,15].

This study was carried out to find the effect of areca nut or betal nut and its different forms like supari, pan gutkha and mainpuri on Blood pressure in comparison with normal control group. Globaly and in Pakistan most researchers studied the local carcinogenic effect of areca nut but this study is unique in our country as it has evaluate systemic cardiovascular effect of areca nut and its products. This study is in agreement with Heck JE et al (2011), who conducted a study in general population of Bangladesh showed similar results as systolic blood pressure in their study was increased from mean value of 118.5±14.3 mmHg in areca nut non chewer to 124.4±2.3 mmHg in areca nut chewers with p value <0.0001, and also diastolic blood pressure and pulse pressure was raised with mean value of diastolic blood pressure increased from 75.8 mmHg in non chewers to 78.6 mmHg in betel nut chewers[3]. In comparison to this study, a community based study among young people in north India also found mean systolic and diastolic BP significantly higher in exclusive gutkha users as compare to non users. The results of their study were mean systolic blood pressure of 139.2±17.4, diastolic blood pressure 86.8±11.5 in gutkha users, and in non users mean systolic blood pressure was 135.7±18.8 and mean diastolic blood pressure 82.6 ±11.5 with significant p value < 0.05[16].

This study was against the study of Tung TH et al (2004) in Taiwan as they found that in betel nut chewers decline in mean of diastolic blood pressure, from 83.0±11.9 to 82.5±11.6 mmHg probably because the study participants were using areca fruit which was unripe, wrapping in Piper betle leaves[17]. The raised blood pressure is because of alkaloids present in areca nut, which includes arecoline, guvacoline, arecaidine, and guvacine. Among them arecoline has central cholinergic action to exert its sympathetic effects. Areca nut products also has ability to release catecholamines from chromaffin cells leading to increase in blood pressure[18].

In case group of this study hypertension among areca nut and it s products users was found in 53 cases 28.80%, while in control group non user it was present in 32 persons 17.39% showing hypertension significantly associated with areca use. This is an important finding because raised blood pressure mostly has no early sign and symptom but it is important hazard factor for atherosclerosis and other cardiac problems so hypertension called 'the silent killer'. The diseases due to hypertension are heart failure and coronary artery disease. It also causes stroke, renal disease and peripheral arterial disease. The major cause of cardiovascular morbidity and mortality throughout the world is hypertension[19]. In comparison of our study the prevalence of hypertension in Bangladeshi betel chewers was 20.5% and in non chewers was 11.55% showing more prevalence of hypertension in betel nut users[3].

CONCLUSION

It is concluded that habit of chewing of areca nut and its products adversely affects cardiovascular system and causes increases in systolic blood pressure and diastolic blood pressure in case group areca nut and its products users as compare to control group non users. The hypertension was more prevalent in persons using areca nut and its products as compare to normal population.

RECOMMENDATIONS

It is recommended that areca nut and its products like pan, gutkha, supari and mainpuri should be consider as a cause of hypertension by health care providers, and there should be ban on products of areca nut.

ETHICS APPROVAL: The ERC gave ethical review approval

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin

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CONFLICT OF INTEREST: No competing interest declared.

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