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Trends and Effectiveness of Ajwa Dates (Phoenix dactylifera) Usage in Management of Coronary Artery Disease, *Study in Urban Community of Islamabad, Pakistan*.

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ABSTRACT

Objectives: To assess the trend and effectiveness of Ajwa dates usage in management of coronary artery disease.

Methods: In this, hospital based descriptive study, 150 cases of CAD were divided into 3 groups. Group One taking Ajwa alone, group Two on allopathic medicine and group Three taking both

Ajwa and allopathic treatment. Data was collected through self-constructed questionnaire. Analysis done on SPSS version 20.

Results: There were 50 subjects in each group. Mean age 52 ± 12 years. M: F ratio was 2: 1. 66% of entire study population was hypertensive, 41% diabetic and 43% hyperlipidemic. Study subjects were assessed for symptoms like chest pain, dyspnea, orthopnea or mixed symptoms. 38% in group One, and 50% in group Two and Three each, had chest pain, 24%, 8% and 22% had dyspnea, 2%, 6% and 12% had orthopnea, whereas 2% 14% and 12% had mixed symptoms in each respective group. Symptomatic relief for chest pain was 37% in group One, 60% in Two and 76% in group Three (P value < 0.05). Dyspnea and orthopnea results were not statistically significant. Overall symptomatic relief was 66% in group Three (P value < 0.05), Out of 2 preparations, Ajwa paste (pulp + seed) and Ajwa combination (Ajwa paste + Ginger garlic syrup), combination therapy was better i.e. 30% in group One and 75% in group Three had symptomatic improvement. Overall, results were highly significant with P value .000.

Conclusion: The study suggests that Ajwa has some role in management of CAD, especially in symptomatic improvement.

Keywords: Ajwa Dates; Coronary artery disease (CAD); Complementary and Alternate medicine (CAM); Cardiovascular Disease (CVD).

INTRODUCTION

Cardiovascular disease (CVD) is spreading like an epidemic through the world [1]. Among all the non-communicable diseases (most of which are chronic) cardiovascular illnesses are the major contributors of all global deaths especially in low-income and middle-income countries and is predicted to increase in coming years [2]. Hypertension, diabetes and hyperlipidemia are major risk factors, where obesity, sedentary life styles and smoking are also important contributors which can induce early small vessel changes leading to major cardiac pathology [3]. Currently with advance in medical technology, herbal or botanical preparations, commonly referred to as complementary and alternate medicine (CAM) are getting popular, for prevention and cure of many illnesses [4-6].

Dates (Phoenix dactylifera) especially Ajwa variety, is one such option for CAD. They are excellent source of natural antioxidants and anti-mutagens [7]. They contain 23 types of amino acids and at least six vitamins, including vitamin A, C, B1, thiamine, B2, riboflavin and nicotine acid [8, 9].

Ajwa, known as king of its species in the Islamic world. It is an excellent source of Potassium and Magnesium, essential for healthy muscular contractions, blood pressure control and normal cardiac rhythm [10, 11].

It has been reported that Niacin content of Ajwa reduces cholesterol and low density lipoprotein levels (LDL) in the blood [12], Moreover the presence of potassium and magnesium improves myocardial contractility and reduces the incidence of stroke and cardiac arrhythmias [13].

In Saudi Arabia more than 450 date palm varieties are cultivated but Ajwa is most expensive of all due to its medicinal properties, in addition to its nutritive value [14, 15].

The key purpose of this study was to document the role of dates (Phoenix dactylifera) Ajwa in management of CAD and to suggest the patients as well as the physicians to utilize the heart healthy benefits of Ajwa. Even if Ajwa has a small synergistic effect, that additional benefit must be provided to the patient.

Research Methodology

The objective of the study was to assess the trend and effectiveness of Ajwa usage in management of coronary artery disease based on symptomatic improvement.

Methodology:

It was an original research (hospital based descriptive study), conducted between March-2016 to September 2016 in Cardiology department of Federal Government Polyclinic Hospital (FGPC), Islamabad (tertiary care hospital). Convenient sampling was done.

Study population: The study population comprised of 150 cases of CAD. Sampling was done using WHO-sample size Calculator / Formula (www.surveysystem.com/sscalc.htm; Confidence Level 95%, Confidence Interval 7.5 and Total Population 1000). Study participants further were

divided into 3 groups (G); those taking Ajwa alone G One; those on routine allopathic medicine G Two and those on allopathic and Ajwa therapies both G Three.

Selection Criteria: Inclusion in the study was based on the following criteria:

Confirmed cases of Coronary Artery Disease (CAD):

- With History of Angina
- And /or Myocardial Infarction (MI) in the past
- And /or the relevant test like base line ECG, ETT, Nuclear scan or Angiography are suggestive of CAD.

Cases with high suspicion of CAD:

- Patient's with one / more major risk factors
- And /or typical cardiac symptoms
- And /or abnormality in base line ECG.

Patients with congenital heart diseases and Cardiomyopathy were excluded.

Data Collection Procedure: Subjects were included in the study after formal informed consent. They were asked to bring previous cardiac record and initial assessment was done using self-constructed questionnaire. They were asked about intake of Ajwa, the duration of therapy and the formulation used, initial symptoms and symptomatic relief, if any, after Ajwa therapy.

Data analysis: SPSS version 20 was used for data analysis. Chi squared test was applied for statistical inference and Anova test was utilized to compare the group means. P-values below 0.05 were considered significant for all analyses.

RESULTS

Out of entire study population (n= 150), n= 50 (33%) subjects were in G One (mean age 50 years), n= 50 (33%) in G Two (mean age 54 years) and n= 50 (33%) in G Three (mean age 53 years). M: F was 2:1, 30.7% were females and 69.3% were males.

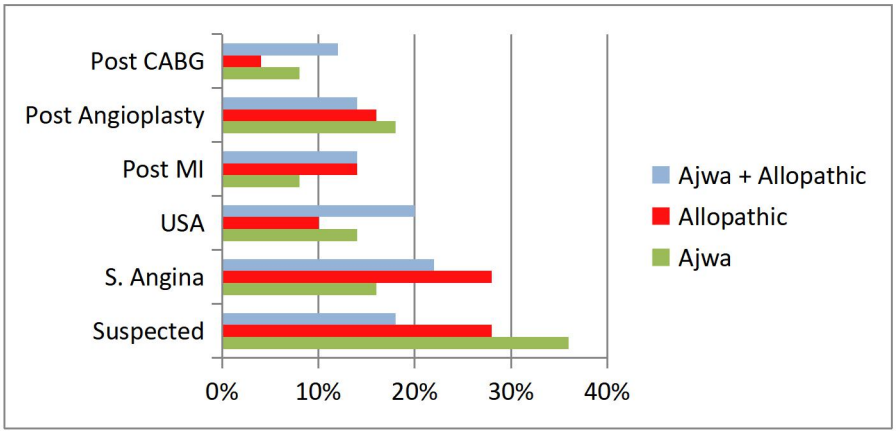
Risk Factor Distribution in Study Subjects: Study subjects were assessed for presence or absence of major cardiac risk factors (Table 1). Study subjects in all 3 groups were matched for age, gender and other relevant socioeconomic characteristics. All 3 groups showed hypertension as dominant risk factor. However Diabetes mellitus and hyperlipidemia were also significant contributors as shown in Table 1.

Table 1: Risk Factor Distribution in Study Subjects

Risk Factors	Ajwa		Allopathic		Ajwa +Allopathic	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Hypertension	31	62	37	54	49	82
D.M.	26	52	27	40	19	32
Hyperlipidemia	28	56	30	44	18	30
Smoking	15	30	19	28	19	32
Family History	20	40	39	58	29	48

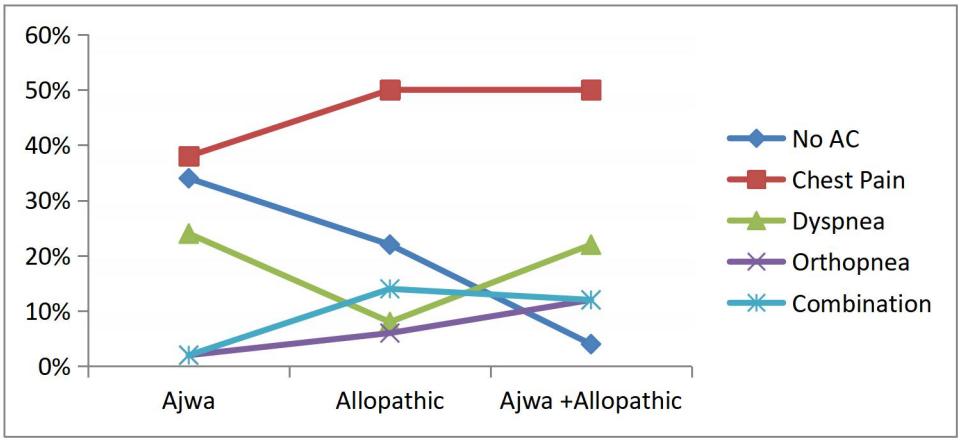
Evaluation of Cardiac Status among Study Subjects: Patients in all the groups were evaluated by the Cardiologist for confirmation of their cardiac status, before inquiring about their therapy. All the major types of coronary artery diseases and their presentations were considered, as shown in Figure 1.

Figure 1: Disease Distribution Pattern among Study Subjects



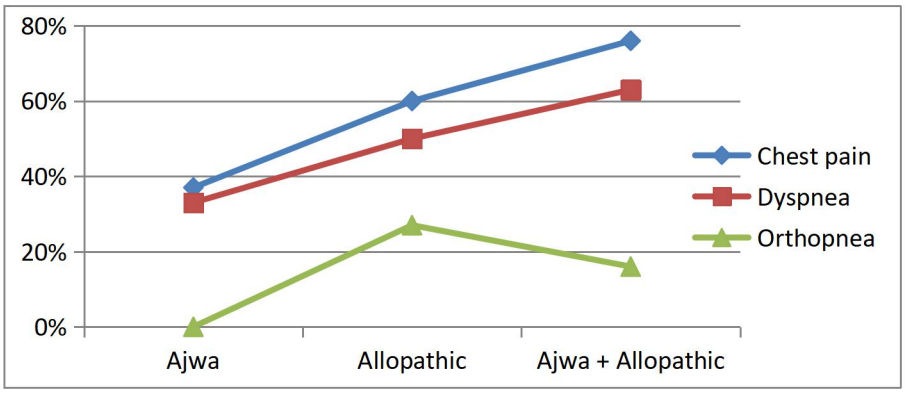
All the study subjects were assessed for presence of typical cardiac symptoms i.e. chest pain, dyspnea (shortness of breath) and orthopnea (breathlessness while lying down), combination of these symptoms or no active complaint. The predominant symptom came out to be chest pain, as shown in Figure 2.

Figure 2: Distribution of Presenting Complaints among Study Subjects



Symptomatic Relief: Percentage symptomatic relief was assessed in each group for individual symptom, using standardized New York Heart Association (NYHA) Functional Classification. In group One, chest pain was relieved in 37% of the subjects, and in group Two and Three, 60 and 76% respectively. The results were statistically significant P value < 0.05. Dyspnea was also significantly improved, 33% in group One, 50% and 63% in group Two and Three respectively, though the results for dyspnea were not that significant (P value 0.07), see in Figure 3.

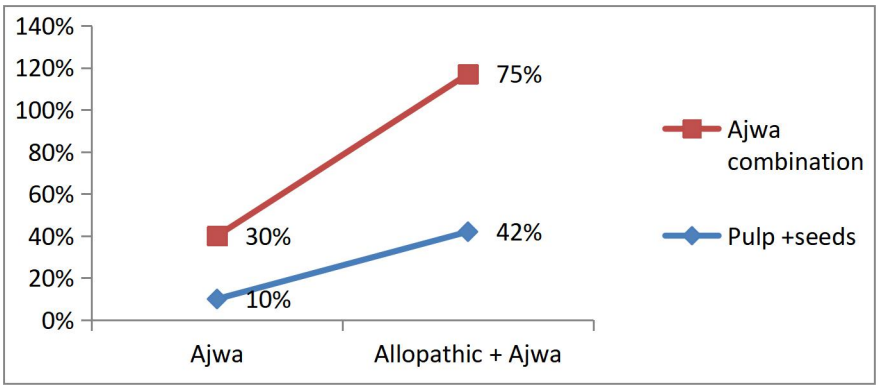
Figure 3: Symptomatic Relieve for Individual



Overall symptomatic relief was the best in group Three (Allopathic and Ajwa both) i.e. 66 %, where over all relief was 22 % and 56% in group One and Two respectively. Almost 60% of entire study populations showed symptomatic relief, but still the best response was in group Three. Applying Chi squared test, the results were highly significant (P value < 0.05).

Two types of Ajwa formulations were popular among the study subjects; Ajwa paste (pulp + seeds) and Ajwa combination (Ajwa + ginger garlic syrup), but the results (symptomatic improvement) was more encouraging with Ajwa combination therapy i.e. 30% in G One and 75% in G Three, see figure 4.

Figure 4: Association of Symptomatic relieve with Type of Formulation



DISCUSSION

Dates (Phoenix dactylifera) are considered to be an ideal food, rich in essential nutrients and highly beneficial for maintain health [16]. Among all the different varieties of dates, Ajwa has some additional known cardio protective benefits.

In this study, patients were asked directly about their experience of Ajwa intake, focusing primarily on cardiac effects. Because the incidence of CAD is very high in Asian, especially in South Asia (India, Pakistan, Bangladesh, Sri Lanka, and Nepal) comprising 25% of the global population and contributes nearly 60% to the global cardiovascular disease burden [17]. Even a small contributory effort for protection against CAD through Ajwa would be very beneficial.

The total study population (N=150) was divided, into 3 main groups on the basis of type of treatment they were taking. Two types of subjects were included in the study, those with strong suspicion of CAD and confirmed cases of CAD.

The study subjects were assessed for presence of five major cardiac risk factors that were hypertension, diabetes, hyperlipidemia, smoking and family history of CAD. Gupta in 2002 studied that there are nine important risk factors (Smoking, DM, lipids, central obesity, hypertension, diet, physical activity, alcohol consumption, psychosocial factors) which are responsible for over 90% of CAD worldwide [18].

The most significant risk factor observed in this study was hypertension, Table 1. Almost 60% of the subjects in each group were hypertensive. In a study (INTERHEART) in 2004 by Yusuf and et al. also showed that uncontrolled hypertension contributed to 22% of the heart attacks and increased the risk of MI twice more than normal [19].

Journal of Human Hypertension reported in 2015, that moderate consumption of dates has definite beneficial effect on blood pressure control due to its high potassium and low sodium content [20]. In addition, American Heart Association has also recommended dates for healthy heart as a major contributor for DASH (Dietary Approach to Stop Hypertension) [21].

It was observed in G One, where the individuals were taking Ajwa alone, that the percentage of having major cardiac risk factors was highest, Table 1. On the other hand when the cardiac status was assessed, percentage of subjects with suspicion of CAD was highest i.e. 36% in G One, Figure 1. As these individuals were having major risk factors with one or more symptoms, perhaps they were more conscious about having heart diseases in future and considering the protective role of Ajwa for CAD, they were more inclined toward taking Ajwa therapy alone. Reason being, there was no clear indication of giving routine cardiac medicines to them, without confirmation of the diagnosis.

In the study, the subjects were assessed for presence of cardiac specific symptoms, chest pain, dyspnea and orthopnea. It was observed that chest pain was most frequently experienced symptom, Figure 2. Percentage symptomatic relieve for chest pain was highly significant (p value < 0.05) and for dyspnea the results were also encouraging (p value < 0.07) as shown in Figure 3.

The results were best in G Three, where the study subjects were taking both Allopathic and Ajwa therapy. However, the net effect could be due to Allopathic therapy and not due to Ajwa, but here

the results of G One were important, where the study subjects were taking only Ajwa, *no other therapy,* even then, 37% subjects showed improvement in chest pain alone and over all symptomatic relief was 22%, as shown in Figure 3.

This was precisely the point that we intended to high light that Ajwa has some independent role in the management of CAD. This could be due to its potassium and magnesium content by reducing blood pressure, controlling myocardial contractility or by reducing low density cholesterol [13]. A study published in the Journal of Agricultural and Food Chemistry in 2015 found that Ajwa has a definite anti-oxidant role and cholesterol lowering effect that gives it classical anti-atherogenic properties [22].

Among the patients taking Ajwa therapy mainly 2 types of formulations were popular: Ajwa paste (pulp and seeds) and Ajwa combination (Ajwa and ginger garlic syrup). Ajwa combination therapy was observed to be more effective, as 30% of the study subjects in G One and 75% of the Group Three, had symptomatic relief with this formulation. One may ask that this additional effect could be due to garlic in this composition as studies have shown favorable effects of garlic in reduction of serum cholesterol levels and blood pressure control. Garlic is also known to have anti-oxidant and anti-platelet activities [23, 24].

But we should not ignore the other Ajwa composition i.e. Ajwa Paste that has Ajwa pulp and seeds, with no additional ingredient. Even in this formulation 10% of individuals in Group One and 42% in Group Three, had symptomatic relief, Figure 4. That effect was purely due to dates (Phoenix dactylifera) Ajwa. Though the proportion of individuals showing symptomatic relief was less than the combination therapy, even then, it supports the fact that Ajwa has some independent beneficial role in the management of CAD.

Conclusion: Study results showed that Ajwa dates definitely has some role in management of CAD, especially in symptomatic improvement.

Recommendation: This study was primarily based on subjective evidence; we recommend that a more detailed study has to be conducted, with more objective evidence, so that the benefits of this natural gift could be better utilized.

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Conflict of Interest: None of the authors have any financial and non-financial conflicts of interest that can have any influence on our research.

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