Cigarette smoking & Malaria: Frequency of Malaria in Smokers versus Non Smokers.

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ABSTRACT

BACKGROUND: Frequency of malaria is has been changed in region according to environmental factor and diseases. Smoking is generally injurious to health, is it protective from malaria or not yet not established. **OBJECTIVE:** The main objective of study is to find out the association between smoking and malaria. **DESIGN:** This was a cross sectional study. **SETTING:** research was conducted at department of medicine, Peoples medical University Hospital Nawabshah from March 2018 to February 2019. **SAMPLE SIZE:** 221 patients male and females' genders with malaria were selected who fulfilled criterion was included. **MATERIAL AND METHODS:** after selection the subjects were categorized for variable analyses like age, gender, malarial features, duration of malaria and presence of malaria parasite and smoker status of patient. Clinical examination was carried out for malaria diagnosis. Samples of blood for malaria parasite and blood grouping were collected. **RESULTS:** There were 112 (50.7%) males and 109 (49.3%) females. 167(75.6%) were not smokers and 54(24.4%) were smokers. Plasmodium vivax was positive in131 (59.3%) cases and plasmodium falciparum 90(40.7%). there were 91 (41.2%) were from urban areas, while 130(58.6%) from rural setup. Smoking grouping was done and different groups like smokers versus non smokers were analyzed for malaria parasite positive. **CONCLUSION:** There is no relationship of cigarette smoking as a preventive tool of malaria; our study concludes that malaria is common in non smokers as compared to smokers.

KEY WORDS: Malaria, Malaria Parasite, Smoking.

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INTRODUCTION:

Smoking causes deaths over 06 million persons annually, indicating that at least one smoking-related death in each5 seconds. There are 1,000,000 additional deaths that happen annually because of HIV, TB, and protozoa infection collective. [1]

The worldwide mortality from tobacco connected diseases reached up to four million annually in 1998 and is predicted to become ten million annually in 2030. This can be quite the overall gift deaths from T.B., malaria, maternal and major childhood conditions combined. [2] Trends of smoking square measuresdynamics in developed and developing countries. Though smoking is static or declining in most of the developed countries thanks to intense public health

measures, it's increasing within the developing countries thanks tolarge promotional activities of cigarette companies [3, 4]. Consistent withUN agency, there have been 800 million smokers within the developing countries in 1997 as compared to three hundred million within the developed world [5]. These figures might notproperlymirrorthe particular proportion of smokers in developing and developed countries, thanks tocompletely different population sizes.

The prevalence of smoking is high in West Pakistan, a trend the same asalternative developing countries [5,6,7]. It'scalculable that one year of men and September 11of ladies use some type of tobacco on an everyday basis. The common age of onset for cigarette smoking in West Pakistanis eighteen years for males and twenty four years for females [8].

There 'ispresently no proofs that smoke from domestic fuel use provide effective protection from mosquitoes and protozoa infection. [9]

The worldwide aggregate of passing from jungle fever could be divided, anticipating 500 000 passing every year, said the World Health Report 1999, which was propelled on May 11 as a prologue to the last World Health Assembly of this century.[10]

Indoor air contamination from the local utilization of biomass energizes by poor families in creating nations is known to be unsafe to wellbeing, and endeavors are being made to address this issue by changes in fuel type, stove innovation, house structure and fuel-use rehearses. Notwithstanding, episodic proof recommends that smoke may assume a significant job by giving assurance from gnawing creepy crawlies and that endeavors to lessen smoke may expand introduction, especially to mosquitoes and intestinal sickness. Given the set number and nature of studies, this finding can't be translated as definitive. The writing identifying with house ventilation and mosquito passage was additionally looked into, and a relationship between overhang spaces and expanded indoor mosquito thickness was noted. Moreover, writing on the impact of ash on the viability of bug spray treated bed nets was considered, however no immediate effect was appeared. Endeavors to diminish indoor air contamination stay attractive even in zones of jungle fever transmission. [9]

Smoking affects the different drugs used in the treatment of malaria by increasing the bioavailability. There are no direct research literatures available on net in relation to smoking and malaria. Rationale of current study is that whether malaria is common or not in cigarette smokers.

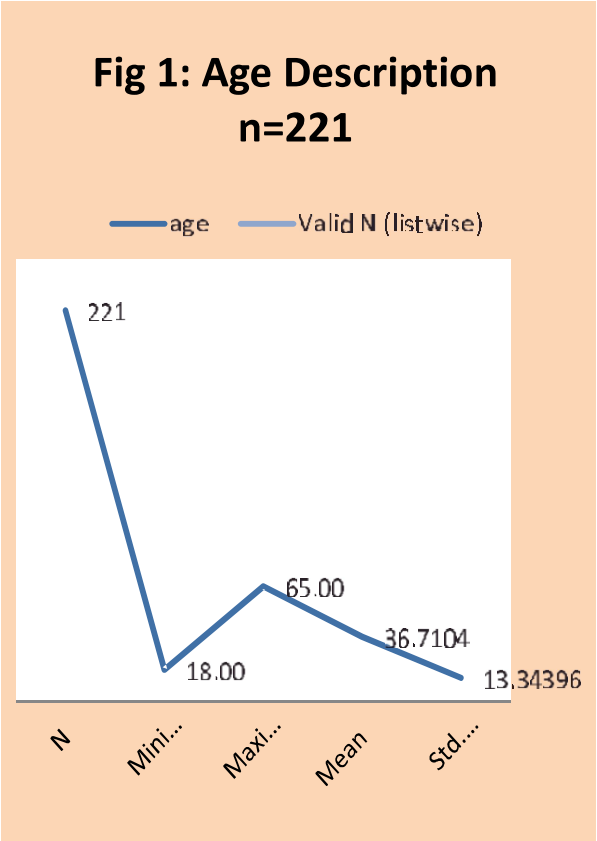
MATERIAL AND METHODS: This study is based on the nulls hypothesis that smoking prevents or not from mosquito bite leading to malaria.The main objective of study is to find out the association between smoking and malaria. This was a cross sectional study. Research was conducted at department of medicine, Peoples medical University Hospital Nawabshah from March 2018 to February 2019.Rao- software calculator was used for sample size.221 patients of both genders with malaria, following satisfying the collection criterion were incorporated.

Data collection &Data analysis: All male female subjects were included with history of fever with other clinical symptoms of malaria were included here. Fevers due to other causes were excluded. After selection the subjects were categorized for variable analyses like age, gender, malarial features, duration of malaria and presence of malaria parasite and smoker status of patient. Clinical examination was carried there for malarial scrutiny. Samples of blood for malaria parasite and blood grouping were gathered. Qualitative and quantities variables were gathered and data was entered in SPSS 20.0 version for the statistical analysis. Mean and SD was calculated. Bivarate correlation of smoking

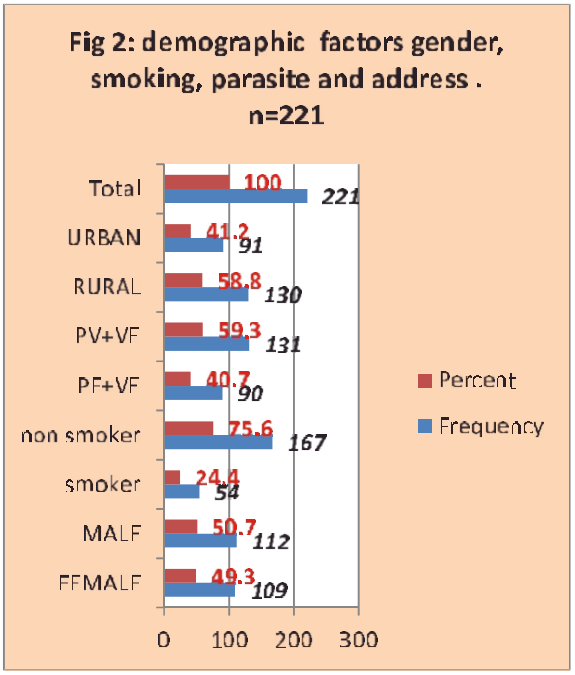
and malaria assessed. P value was calculated to check the statistically significance of this study.

Results:

There were total 221 subjects who were suffering from malaria with positive test were included in present research. The mean age of subjects was 36.7104 SD+13.34396; minimum level was 18 years while the level at maximum was 65years. As shown in **figure 1.**



On the other hand the demographic assessment had shown there were 112 (50.7%) males and 109 (49.3%) females. 167(75.6%) were not smokers and 54(24.4%) were smokers. Plasmodium vivax was positive in131 (59.3%) cases and plasmodium falciparum 90(40.7%).there were 91 (41.2%) were from urban areas, while 130(58.6%) from rural setup. As shown in **figure 2.**



able 1: Cross-tabulation of malaria parasite with gender and smoking *. n=221

malaria parasite				smoking		Total	p-value
				smoker	non smoker		
PF+VE	Gender	Female	Count	5	42	47	.006
			% of Total	5.6%	46.7%	52.2%	
		MALE	Count	15	28	43	.012
			% of Total	16.7%	31.1%	47.8%	
	Total		Count	20	70	90	
			% of Total	22.2%	77.8%	100.0%	.005
PV+VE	Gender	Female	Count	6	56	62	
			% of Total	4.6%	42.7%	47.3%	.000
		MALE	Count	28	41	69	
			% of Total	21.4%	31.3%	52.7%	.000
	Total		Count	34	97	131	
			% of Total	26.0%	74.0%	100.0%	.000

Regarding the relationship of smoking with gender and plasmodium type, plasmodium falciparum was positive in 05 smoker females, 42 non smokers out of 47 females. P=0.006. in males the plasmodium falciparum was positive in 015 smoker males, 28 non smoker out of 43 males. P=0.012. In total 20 were smoker male and females while 70 were non smokers from the total of 90 subjects. P=0.005

Regarding the relationship of smoking with gender and plasmodium type, plasmodium

vivax was positive in 6 smoker females, 56 non smokers out of 62 females. P=0.000. In males the plasmodium vivax was positive in 28 smoker males, 41 non smokers out of 69 males. P=0.000. In total 34 were smoker male and females while 97 were non smokers from the total of 131subjects. P=0.000. The results from above **table 1** were significant statistically.

DISCUSSION:

Smoking is not used as preventive tool for protection from mosquito bite in our setup. Countless studies are available worldwide about malaria but correlation of mosquito bite and smoking was not established yet. Definite outcome of this study is controversial if we enlist smoking as preventive tool of mosquito bite there are lot of hazardous of smoking.

However, anecdotal proof suggests that smoke might play a crucial role by providing protection from biting insects which efforts to cut back smoke might increase exposure, significantly to mosquitoes and protozoa infection. This paper reviews the literature with reference to the repellent result of smoke on mosquitoes and finds that cigarette smoking plays no role in prevention of malaria.

Shamasuddin et al concluded regarding addiction status that 58.5% subjects were not addicted while 39.5% were addicted to different substances in their life. p value <0.001.[12]

Study conducted by Jamali AA et al There was dominancy of plasmodium vivax in their study also.[12] In another study there was dominancy of infection by plasmodium vivax 60.25% in comparisonto 39.75% patients who had infection by p. falciparum [13]. In another study by Shams et al males were in dominant ratio than females. Married were common than unmarried. There were prominent figure of subjects from young age group, than subjects from middle and old age groups respectively.[14]

Jamali AA et al analyzed cases of malaria with mix infections (p. falciparum and p vivax), there was dominant ratio of p. falciparum than p. vivax, while only 01% cases of plasmodium malaria were diagnosed and no case of p.ovale detected [15]. Jamali AA et al A total of 2260 cases of suspected malaria were recruited, out of them 450 cases were positive for malaria, their mean age was 38.33+13.17years, 53.8% were males and 46.2% were females. Combined malaria infection was observed in 11.78 % of the subjects by malaria ICT antigen test. There was no significant association of mixed plasmodium species according to age and gender; p-values were quite insignificant. Combined malaria infection was observed 11.78% by malaria ICT antigen test. Early diagnosis and management is crucial to save the lives in subjects suffering from mixed malaria infections.[16]

Preventing role of cigarette smoking from malaria is unknown. The current study was designed to assess the frequency of smoking in patients suffering from malaria. Thru the literature search, no sufficient evidence was available on the internet regarding malaria and smoking directly. We hypothesized that cigarette smoke works as repentant for mosquito bite but it was very difficult to prove here. There are many questions that 1. The smoking only may prevent from bite when the subject smokes? 2. Does the smell of cigarette acts as repellant from a mosquito bite, 3. Do the contents of smoke which are absorbed in the body may act as prevention of mosquito bite? 4. Does smoke toxin produce resistant to malarial infections? There are many other research queries which need proper scientific answers. But keeping in mind the harmful effects of smoking all the authors of the current study are unanimously against the use of cigarette smoking overall and especially its use as a preventive tool for malaria.

Studies are required for the advantageous/unsafe job of cigarette smoking and malarial sickness. Past concentrates are

not indisputable. There is the requirement for multicentre randomized preliminaries/review preliminaries on the heading of malaria fever and smoking. Despite the fact that the other smoke techniques utilized as anti-agents for the counteractive action of mosquito chomp were utilized customarily since long yet smoking cigarette is dubious and at the same time perilous to wellbeing. We emphatically lament the utilization of smoking as a preventive apparatus for malaria fever. On opposite the writing identifying with the anti-agents impact of smoke on mosquitoes and finds that there is as of now no proof that smoke from residential fuel utilize gives successful insurance from mosquitoes and malarial fever.

Conclusion:

There is no relationship of cigarette smoking as a preventive tool of malaria; our study concludes that malaria is common in non smokers as compared to smokers. So we regret the use of cigarettesmoking.

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