SOCIODEMOGRAPHIC ASSOCIATING RISK FACTORS OF RHEUMATIC HEART DISEASE; AGE 5 TO 15 YEARS AT NICVD SUKKUR.

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Abstract

Introduction: Millions of peoples are suffering from rheumatic heart diseases in which 2500,000 deaths occur throughout the world each year, whereas a high ratio found in developing countries. Rheumatic heart disease is the sequel of the depressed autoimmune response. Pakistan is one of those countries in which rheumatic heart disease is endemic, RHD has leading causes of death from 5 to 15 years of age, and also have a major contribution to disabilities in Pakistan. **Objective of study:** Assess the frequency of sociodemographic risk factors of rheumatic heart diseases among children of age 5 to 15 years. **Material &Method:** This is cross sectional study conducted at National Institute of Cardiovascular Disease Sukkur Satellite. In which nonprobability convenience sampling technique was used. **Results:** The sample size of the was 196. Age of subjects were 5 to 10 as 45(22.96%) and the 11 to 15 years as 151(77.04%). Mean age of the subjects was 12.74. Male gender dominating as 108 (55.10%) and female were 88(44.90%). Male seen 1.25-time greater risk for developing the disease.Residential from rural 136(69.39%) and urban 60(30.61%), joints family, educational level of parents and domestic animals have sound contributor of Rheumatic heart disease. **Conclusion:** This study successfully found sociodemographic risk factors for rheumatic heart disease; residents of rural areas, joint family, and more than 3 peoples per room. Further, children, whose parents /guardians were illiterate and unemployed, were more prone to develop RHD.
Keywords: Rheumatic Heart disease, Socioeconomic factors, School age children, Environmental factors.

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INTRODUCTION:

Millions of peoples are suffering from rheumatic heart diseases in which 2500,000 deaths occur throughout the world each year, whereas a high ratio found in developing countries.[1] Rheumatic heart disease is the sequel of the depressed autoimmune response, may affect multiple organs and leads to permanent valvular damage further, the rheumatic heart disease mainly involve the patient heart, joints, brain, or skin.[2,3] Pakistan is one of those countries in which rheumatic heart disease is endemic, RHD has leading causes of death from 5 to 15 years of age, and also have a major contribution to disabilities in Pakistan as throughout the world in young age, and, exists and dominant in rural communities as compare to urban once. [4] In Pakistan 67.5% people's residence of rural areas, in a study the prevalence of rheumatic heart in Pakistan is increased from 10/1000 to 14.6/900 of the population in which male and female ratio as 33.3% and 66.6% respectively.[5] The gender differs in Rheumatic heart disease, RHD is more common in female as well compare of male, its due to genetic chances and riskier to develop the disease, additionally 15% family history contributes in RHD cases. [6] A major risk contribution for the development of Rheumatic fever and rheumatic heart disease is environmental factors; such as overcrowded, poor sanitation, and limited resources in health care facilities. Further home shared with domestic animals and pets have sound contribution of RHD in school age children.[5,7,8] Furthermore, risk factor like peoples living more than two adults per room, parent's employment and joint families further infected person with in-home or neighbor plays domain role for the increase the burden of the disease.[9] Un-employment is another determinant, nature of work and limited level of income is directly associated with prevalence of rheumatic heart disease, Uganda and African peoples found more susceptible to RHD moreover the health sector furlong from health care also delayed or fails to receive earlier health care facilities. [10] Rheumatic heart disease is leading cause of disability in those individuals who are un-aware or limited knowledge .[11] Rheumatic heart disease is also persisting in agricultural areas specialty poor communities, and become more pathogenies as compare to non-agricultural

areas.[12]

Rational of the study:
Several studies investigated the relation and incidence of rheumatic heart disease, and several studies also for the diagnostic purpose, but no study investigated done on the sociodemographic relation with rheumatic heart study

Objective of study: Assess the frequency of sociodemographic risk factors of rheumatic heart diseases among children of age 5 to 15 years.

Operational definition:

1. Type of house categorized as;
1.1 Kacha house: The type of house made from mud or living in tent.
1.2 Paka House: Type of house made of from cemented.
1.3 Kacha-Paka: Type of house made of both mud and cement

2. Education status:
2.1   No Education: any formal education.
2.2   Primary: Level of education is 5 years.
2.3   Secondary: Level of education is 8 years.
2.4   Matric: Level of education is 10 years
2.4   Intermediate: Level of education is 12 years.
2.5   Graduate or more: Level of education is 14 years or above.

3. Economic status:
3.1 Lower class: Less than rs.30000.
3.2 Middle class: From rs. 30000 to rs.60000.
3.3 Upper class: More than rs. 60000.

Material and methodology:
Study design and settings: This is a cross-sectional study in which the Non-probability convenient sampling technique was used for data collection. This study conducted was conducted at the National Institute of Cardiovascular Disease Sukkur Satellite. **Study population:** Pre-diagnosed patients of rheumatic heart disease were enrolled. Further data was collected from the parents of the subjects or guardian. **Study duration:** Three months followed by approval of ethical review committee, (ERC LUHMS) Liaquat University of Medical & Health Sciences Jamshoro from 1st October 2019 to 31st December 2019. **Data collection method:** After receiving approval from Ethical review committee Liaquat University of Medical and Health Science Jamshoro; the permission was taken from head of department of National Institute of Cardiovascular Diseases of Satellite Sukkur. Further, a formal written consent was also taken from every parent or guardian of subject **Data analysis:** The data analyzed in Statistical Package for Social sciences (SPSS) for windows version 23, further, frequency and
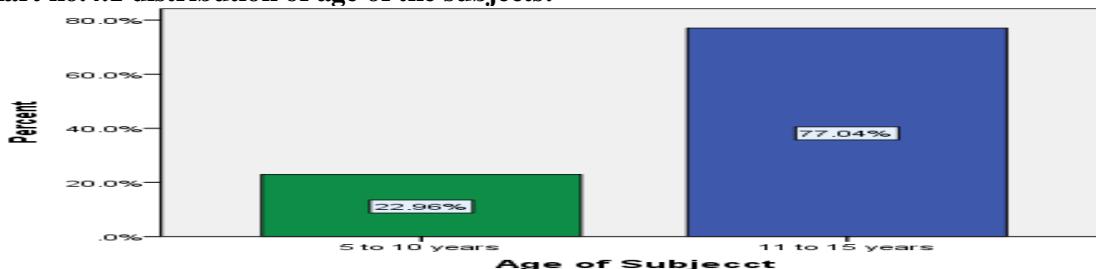
percentage will be calculated, and continuous variable mean and SD ± computed. **Study population:** 05 to 15 years' patients of rheumatic heart disease both acute and chronic and data have been collected from parents or guardian. **Sample size:** Sample size of the study was 196. **Data collection method:** After receiving permission from Ethical review committee Liaquat University of Medical and Health Science Jamshoro; the permission was taken from higher authority of National Institute of Cardiovascular Diseases of Satellite Sukkur. Further, a formal written consent also taken from every parent or guardian of subject **Data presentation:** The data was presented through frequency, percentage, and charts.

Results
The subjects enrolled in study were 196. The age of subjects is divided in to two categories from 5 to 10 as 45(22.96%) and the 11 to 15 years as 151(77.04%). The mean age of the subjects is 12.74 with standard deviation ± 3.043.**Chart no.1:** The gender difference between subjects as male 108 (55.1%) and female were 88(44.9%). Male 1.25 times greater risk for developing the disease. Male has seen more prone to develop rheumatic heart disease.**Table.no.1** the subjects 60(30.6%) were from residents of urban and 136 (69.3%) from were residence of rural areas who have rheumatic heart disease. **Table.no.2.** Subjects belong from joints family were 140 (71.43%) and, 56(28.57%) belongs from a nuclear family.**Table.no.3** level of the educational completed by the parents of the patients as no education or illiterate 61(31.12%), primary 26(13.24) %, secondary 44(22.45) %, matric 51(26.02%), higher secondary 6(13.6%), master 6 (3.1%) and more 1(1.02%). In this study the employment of the parents as farmer 47(24%), Labour, 66(33.7%) and self-employed 83(42.3%).Monthly income is divided into, earning less lowclass, middle class and upper class as 115 (58.7%), 61(31.1%) and 20 (10.2%).The house of the participant's house made of Kacha, Kacha-paka and Paka as 129 (65.8%), 39 (19.9%) and 28 (14.3). The particulars 58 (29.6%) peoples less than 3 peoples per room 28 (13.6%), were 3 peoples per room and more than 3 persons per room were 110 (56.1%). The particular have domestic animals in their house were 126(64.3%) and those did have domestic animals or pets in house were 70(35.7%).Particular using source of water for domestic use were as ground water 144 (73.5%), water supply 40 (20%) and well water 12 (6.1%). Table. No.4.

Chart no.4.1 distribution of age of the subjects:

Table no.01.Distribution of gender of the subjects:

		Frequency	Percent
Valid	Male	108	55.1
	Female	88	44.9
	Total	196	100.0

Table no.02.Distribution of area of residence of the subjects:

		Frequency	Percent
Valid	Rural	136	69.4
	Urban	60	30.6
	Total	196	100.0

Table no.03.Distribution of type of family of the subjects:

		Frequency	Percent
Valid	Nuclear Family	56	28.6
	Joint Family	140	71.4
	Total	196	100.0

Table no.4.Distribution socio demographic characteristics

level of education of parents		Frequency	Percentage
	Illiterate	61	31.1
	Primary	26	13.3
	Secondary	44	22.4
	Matric	51	26
	Intermediate	6	3.1
	Graduate or more	8	4.1
	Total	196	100
Nature of work of the parent of subjects			
	Farmer	47	24
	Labour	66	33.6
	Self employed	83	42.3
	Total	196	100
Income of the parent of the subjects			
	Lower class	115	58.6
	Middle Class	61	31.1
	Upper class	20	10.2
	Total	196	100
Peoples Living per room			
	Less than 3 people per room	58	29.6
	3 peoples per room	28	14.3
	More than 3 peoples per room	110	56.1
	Total	196	100
Type of house			
	Kacha	129	65.8
	Kacha Paka	39	19.9
	Paka	28	14.3
	Total	196	100
Domestic animals or pets			
	Yes	126	64.3
	No	70	35.7
	Total	196	100
Source of water			
	Ground water	144	73.5
	Water supply	40	20.4
	Well water	12	6.1
	Total	196	100.0

DISCUSSION:

The current study; finds that the patient age 11 to 15 years more developed RHD as compare to another age group. According to a study conducted in 2016 in Bangladesh shown that subjects from 5 to 19 years of younger and children more affected from RHD.[13] A cross-sectional study conducted in 2016 in Africa revealed very close to my finding and showing that 5 to 16 years of age were involved in disease.[14]

Rheumatic heart disease is more common among females, presumably because they are more sensitive to streptococcus A, or potentially, due to the genetic predisposition. In this study, subjects enrolled as 55.1% were male and females were 44.8%. Male has seen 1.25-time greater risk for developing the disease. A cross-sectional study conducted in Karachi, Pakistan in 2017, sated that female as compared to male

more develop the RHD.[10] In the current study, the subjects belong to rural areas was 69.9% and the other participants 30.61 % was from the urban area, this shows that the peoples from the rural area nearer of disease as compared the peoples from the urban. A cross-sectional study conducted in Multan in 2016 showed that 80% of the subjects who suffering from rheumatic heart disease belong from rural areas. A descriptive cross-sectional study conducted in Pakistan (Multan) shows; subjects from rural areas 65% and 35% from the urban area who have RHD.[15] Poverty, malnutrition, overcrowding, poor housing, and a shortage of healthcare resources are still prevalent in Africa, including Nigeria.16 In this study, 18.6% of participants belong to the nuclear family, and the participants from joint families as 71.4%. This finding showing that the majority of the subjects from a joint family have rheumatic heart disease. Literature supports the environmental condition like crowding and resident of the joint family could contribute to high group A Streptococcus transmission and susceptibility to infection, thus increasing RHD risk.[17]

In the current study, the Educational level parents / educational completed by the parents of the patients as illiterate 31.12%, primary 13.24 %, Secondary 22.45 %, Matric 26.02%, Higher Secondary 13.6%, Masters or more were 3.06% and 1.02% further, nature of work as farmer 24%, Labour 33.7% and self-employed 42.3%. Comparing to a study, conducted in Uganda in 2016, reported that 79% patient of parents were unemployed.[18] Another Ethiopian cross-sectional study conducted in 2016, found that 27% of the parents have employment, and the remaining 73% were unemployed including labor and farmer, Additional parental education status as illiterate 62% and literature were 38%.[6,19] These studies supporting my finding. In the current study, the participants house of the participant's houses made of Kacha, Kacha-Paka, and Paka as 65.8%,19.9%, and 14.35. Compare to a cross-sectional study conducted in Nepal in 2016, revealed that 10% were made of mud,67% of Roof made of Tin and more risk, and 3.5% of house were cemented.[20] In current study, the subjects 29.6% less than 3 persons per room 13.6%, 3 peoples per room and above than 3 peoples per room were 56.1%. Further, this study also finds the association of RHD and an excessive number of houses in the room. According to a study conducted in 2016 at Karachi, 1.6 peoples per room have sound relation with rheumatic heart disease.[16] These findings also support my findings that excessive number of peoples per room are more prone to develop RHD.

In the current study, 64.3% of those have or houses shared with domestic animals or pets in the house. A cross-sectional study conducted in Ethiopia in 2017 revealed that 54% of the participants have shared their home with domestic animals.[20] This study also favors of my findings. In the current study, a majority of the participants was using water for domestic use as groundwater 73.5%, water supply 20.4%, and little amount using well or stored water 6.1%. A community-based study conducted in Ethiopia showed that 38% of participants using a hand pump and 62% have river water for domestic uses.[6] Here is situation is difference it's may be due to geographic changes.

CONCLUSION:
This study successfully found sociodemographic risk factors for rheumatic heart disease; residents of rural areas, joint family, and more than 3 peoples per room. Further, children, whose parents /guardians were illiterate and unemployed, were more prone to develop RHD. Additionally, this study also analyzed the frequency of RHD more common in rural areas, joint family, Kacha type houses, and shared home with domestic animals.

Limitation: This study conducted in one health care setting, so cannot be generalized.

Recommendation:
RHD can be eradicated through improving sanitation and hygienic condition, education sessions should conduct in urban as well as rural areas, females especially mothers and pregnant women should give special attention.

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