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Trachoma in School Going Children at District Bahawalpur, Pakistan: Incidence and Causes

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ARTICLE DETAILS	ABSTRACT
History: Accepted 15 November 2018 Available online 31 December 2018	This study is a pilot collaborative effort between academic and clinical sectors for exploring the incidence of trachoma among school going children in Pakistan ranging from 4-18 years olds from January to June 2019. A three-stage random sampling technique was employed. At stage one, out of five; two tehsils of District Bahawalpur were selected. In the second stage, four union councils from two selected tehsils were selected randomly. In the third and final stage of random sampling, two government schools from each union council were randomly selected from selected union councils. In each school, all willing students wanting a free eye check-up were entertained for initial screening. Anyone having complains regarding eye irritation, redness, watering, pain or vision loss symptoms were screened for trachoma. Out of 16 selected Government schools, seventeen hundred and thirty seven (n=5737) participants were selected ranging from 4 to 18 years olds. Data were analyzed using Eviews 7.0. Trachoma was observed in total of 169 cases (74 male, 95 female). 2.94% overall trachoma prevalence was seen (2.39% for male students and 3.59% for females). Female children suffered from higher prevalence of trachoma (1.20%).
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1. Introduction

Bacterium Chlamydia Trachomatis is the root cause of Trachoma. It is an infectious ailment. Fortunately, if detected at earlier stages, it is treatable. However, if Trachoma lasts over years it results in corneal scarring and eventual blindness. Based on March 2019 data, around the globe, population of trachoma prevalent areas is around 142 million and these people are at risk of getting blind due to trachoma [1]. Out of all other possible global causes of blindness and vision impairment, trachoma contributes around 3% [2]. Economic burden created by trachoma blindness is very large. According to WHO, alone in USA

this burden ranges from 2.9 to 5.3 billion \$ annually [1]. Visual impairment or blindness is a leading cause of health poverty in developing countries and poor socio-economic conditions result in trachoma due to communication via inadequate hygiene, crowded households, and inadequate access to water and sanitation [1, 3]. This means if intervention is not done trachoma can spread pretty quickly plus repeated and prolonged trachoma of children can develop into irreversible blindness in adulthood [4]. By improving sanitation and hygiene, the illness has been eradicated from all industrialized nations of the globe [5]. Trachoma affects mothers and children mostly, that is why in school going children incidence of trachoma is high [4, 6]. Furthermore, as incidence of trachoma has strong positive correlation with deprived socio-economic conditions [4], current study picked government schools of sampled rural union councils to focus the expected most affected segment of the population [7]. Trachoma is still endemic in many underdeveloped countries of the world especially African countries, where trachoma prevalence ranges from 60% to 85% [8, 9 and 10]. In these countries most affected population ranges from 1 to 9 years old [10]. Developed countries have successfully eliminated trachoma because of improved hygiene and sanitation [11]. Since 2002, Vision 2020 initiative is being followed in developing countries in order to make them trachoma free [12] is under development since 2002, is a long term plan to completely eradicate this disease. Pakistan as a country is still facing trachoma issue [1, 13]. Some studies and projects have tried to record the incidence of trachoma in different districts of Pakistan [13, 14]. However, they have covered D.G. Khan (Punjab), Chitral (K.P.K) and Shahdadt (Sindh). According to one estimate about 0.81 million people suffer from trachoma [15]. As we move towards upper Sindh, the prevalence of trachoma increases (96.6%), affecting mostly females [16]. Bahawalpur being a district composing mainly of rural areas of Southern Punjab multiple factors that lead to trachoma like, bad sanitization, jam-packed homes, insufficient cleanliness conveniences and water dearth [1].

No study has been carried out in Bahawalpur district to record the incidence of trachoma or measure the intensity of risk factors of trachoma. Current study aimed to fill this gap in literature and data collection. After six months of data gathering and analysis current research has clinically screened and observed 5737 students of 16 different government schools for trachoma. 69 different cases of trachoma were recorded. Almost 3% of the sample population was suffering from trachoma. Out of these 3% almost 15% were already chronic cases, mostly females. Further expanded studies and projects with remedial measures are suggested to eliminate trachoma from Bahawalpur district. 'SAFE' a strategy comprising of options of surgery, antibiotics like (azithromycin), facial cleaning and environmental improvements have been recommended as remedial measures by WHO [17].

2. Materials and Methods

A cross sectional study based on community was piloted in Bahawalpur district for six months (January - June 2019). Bahawalpur is a district of 3.668 million people, out of which more than 67 % live in rural and underdeveloped southern Punjab villages. A three-stage random sampling technique was employed. At stage one, out of five; two tehsils of District Bahawalpur were selected (Ahmedpur East and Khairpur Tamaiwali). In second stage, four union councils from two selected tehsils were selected randomly (Uch Sharif, Khurampur and Tibbi Izzat from Ahmedpur East and Gadden from Khairpur Tamaiwali). In third and final stage of random sampling two government schools from each union council (one girls and one boy's school) were randomly selected from selected union councils. In each school all willing students wanting a free eye check-up were entertained for initial screening. Anyone having complained regarding eye irritation, redness, watering, pain or vision loss symptoms were screened for trachoma.

Idea of this research was conceived as a collaborative effort among Department of Economics, Government Sadiq College Women University, Bahawalpur and Department of Ophthalmology, Tehsil Headquarter Hospital, Ahmedpur East to reduce vision impairment as a cause of health poverty in Southern Punjab. Technical guidance of designing and implementation of research was taken from National College of Business Administration and Economics, Lahore. Before interacting with the students as subjects of the study an oral informed consent was taken from the head of the school and the subjects themselves. Cases that were approaching or at the stage of Trichiasis, for further investigation and treatment, were referred to BVH and Civil hospital Bahawalpur. Data collection was done by examination of subjects both clinically and physically. Hygienic conditions were checked from the condition of nails, hair, ears, teeth and general condition of their uniforms. At the end of each data gathering session with kind cooperation of the school heads an one day prior announcements at the local mosques open invitation to the parents and other community members was sent for a presentation on the causes and remedial measures of trachoma along with the consequences of prolonged disease was given in order to create awareness in students and community.

Data was gathered by the researchers themselves especially the ophthalmologist in order to have reliable data collection procedure. As willingness of the students was a critical aspect of participation in the study therefore sample was not calculated. Data analysis was done using Eviews version 7.0.

3. Results

Total sample size (n= 5737) was five thousand seven hundred and thirty seven students ranging from 4 years to 18 years of age. 16 schools picked were from primary to high schools. Majority were males (53.88%) (n= 3091) and females were 46.12% of the sample (n= 2646). Out of the total 169 cases of trachoma detected from this sample (n=74) were males (2.39%) of the males participants, whereas, females suffering from trachoma were (n= 95) comprising 3.59% of the female sample (Table-1).

Table-1: Union council wise Trachoma INCIDENCE and PERCENTAGE

Tehsil	Union Council	Males sample size	Trachoma cases (males)	Females sample size	Trachoma cases (females)	Total sample size	Total trachoma cases
Ahmedpur	Uch Sharif	871	17 (1.95%)	784	27 (3.44%)	1655	44 (2.65%)
	Khurram pur	649	19 (2.92%)	543	25 (4.60%)	1192	44 (3.69%)
	Tibbi Izzat	535	22 (4.11%)	366	18 (4.91%)	901	40 (4.43%)
Yazman	Gaddan	1036	16 (1.54%)	953	25 (2.61%)	1989	41 (2.06%)
Total		3091	74 (2.39%)	2646	95 (3.59%)	5737	169 (2.94%)

Source: Authors' calculations

Worst situation appeared to be at Tibbi Izzat (4.43%) and Khurram pur (3.69%), Ahmedpur whereas Uch Sharif (2.65%), Ahmedpur and Gaddan (2.06%), Yazman appeared to have slightly lower incidence of Trachoma. However, overall the incidence of trachoma (2.59%) as per percentage of the sample was high enough to be considered a focus point of further action in order to eliminate this blinding disease. It is observable from the data that rural and under developed conditions, open sewerage, congested and narrow lanes, dusty and full of flies environment is strongly correlated to incidence of trachoma. As there

was even a slight improvement of these conditions in union councils there was a major change in the incidence of trachoma. Tibbi Izzat and Khurram pur being less developed in environmental and hygienic conditions had higher incidence of trachoma as compared to Uch Sharif and Gaddan.

Furthermore, data also depicted high correlation of bad personal hygienic conditions with incidence of trachoma. It appeared to impact smaller age groups from 4-10 years more as compared to elders (Table-2).

It is very evident from the data that introduction of simple hygienic habits of washing face, nail cutting, brushing teeth and keeping clothes and hair tidy are missing from your young generation. Where this is depressing to know that as a nation we need to groom ourselves on basic hygienic habits, it is also encouraging to know that introduction of simple habits of self-maintenance can help reduce or even eliminate irreversibly blinding diseases like trachoma. Data shows that young children have worst hygiene when they are more dependent upon their mothers. Uneducated mothers fail to realize the danger of bad hygienic habits. Secondly, data also shows that poor hygiene of hands and face (especially dirty nails, hands, unwashed face) is the major cause of trachoma in underdeveloped rural areas.

Table-2: Age-wise Personal hygiene and incidence of trachoma

Hygiene issue	(4- 8) year olds	(9-12) years old	(13-18) years old	Total Trachoma cases
Dirty nails	71 (97.2%)	44 (84.6%)	13 (29.5%)	
Dirty hands	65 (89.04%)	35 (67.2%)	25 (56.8%)	
Ear infections (e.g. Suppurative otitis media)	26 (35.6%)	17 (32.6%)	8 (18.1%)	
Un-washed face	66 (90.4%)	38 (73.1%)	18 (40.9%)	
Un-brushed teeth	70 (95.8%)	48 (92.3%)	27 (61.3%)	
Dirty hair	45 (61.6%)	27 (51.9%)	19 (43.1%)	
General condition of uniform	47 (64.3%)	41 (78.8%)	26 (59.1%)	
Total trachoma cases	73	52	44	169

Source: Authors' calculations

Graphical Representation of Data

Figure# 1: Tehsil-wise trachoma distribution

Ahmedpur East being more populated tehsil got more representation in total sample size. 76% of the trachoma cases and 24% belonged to Yazman.

Figure# 2: Union Council-wise trachoma distribution

All four included union councils depicted almost same share of trachoma cases. Uch Shareef and Khurumpur experienced slightly higher percentage share.

Figure# 3: Gender-wise trachoma distribution

Trachoma appeared to be impacting females more as compared to females. This finding was actually supporting earlier studies (see 4, 6).

Figure# 4: Age-wise trachoma distribution

Trachoma incidence has seen mostly in smaller age groups. However, with increase of age the intensity of the problem aggravated. In the third age bracket only 18% cases were reported but these were mostly chronic cases with trachoma scarring, and trachoma Trichiasis already developed. These findings were also supporting earlier study finding in other countries of the world.

Figure# 5: Gender and Age-wise trachoma distribution

Close inspection of the data revealed that females in all age groups suffered more as compared to males. This means gender is a strong determinant of trachoma incidence. This also means that personal hygiene habits of females in Bahawalpur district need to improve. If environmental factor was the major

cause of trachoma no gender related pattern should have emerged.

4. Discussion

Elimination of neglected topical eye diseases like Trachoma is a major health objective of sustainable development goals (SDG # 3.3) [17]. Efforts are going on in Pakistan to map incidence of trachoma in different districts of all four provinces of Pakistan. A major project of mapping of trachoma has covered 43 EU's of 15 more districts all over Pakistan. 21% of the studied EU's were trachoma prevalent EU's. From Punjab 69 villages were covered [18]. Unfortunately Bahawalpur was not one of these districts. Bahawalpur with a total population of 3.668 million has five tehsils, namely, Ahmedpur East, Khairpur Tamiwali, Yazman, Hasilpur and Bahawalpur. Current study is an effort to fill this gap. Some other studies have also recorded trachoma prevalence in different areas of Pakistan [13, 18, 19, 20, 21]. There is a large amount of variation among different areas as it depends upon many environmental and socio-economic factors. For example in D. G. Khan 1.91% incidence of trachoma was recorded [13], in Mir Ali, a Tehsil of North Waziristan Agency it was 25% [21] whereas in Upper Sindh prevalence of trachoma was very high (96.6%) [20]. Our study recorded results 2.94%. Our results are towards lower prevalence as compared to other studies. However, still Bahawalpur district needs a focused trachoma elimination program as the incidence of trachoma is not negligible. One factor common to other studies is that females and younger children suffered more from trachoma [20]. Uneducated mothers, parental dependency, un-hygienic habits; dirty environment and other socio-economic factors are the major causes of trachoma in Bahawalpur district. SAFE strategy of WHO if implemented via targeted projects can help eliminate trachoma from Bahawalpur.

5. Conclusions

There is 2.94% prevalence of trachoma in District Bahawalpur. Females and young children ranging from 4-10 years old were major sufferers. Major causes of trachoma included uneducated mothers, parental dependency, un-hygienic habits; dirty environment and other socio-economic factors. Simple awareness of maintaining personal hygiene will help in eliminating trachoma from district Bahawalpur.

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