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COMMUNITY MITIGATION ACTIONS FOR COVID-19

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There are several actions that individuals and communities can take to help reduce the chance that they, their families and friends, and their communities get COVID-19. In general, the more cases spreading in your community, the more likely it will spread to you or your family. Also, the more people an individual interacts with, and the longer each interaction lasts, the higher the risk of viral spread. Location can be a factor, too, with outdoor activities generally being less risky than indoor activities.

Individuals can take the following community mitigation actions:

- Wear a mask (with some exceptions) when in public settings, or around others not living in the same household.
- Follow healthy hygiene practices, such as frequent hand washing.
- Practice social distancing.
- Stay home when sick.
- Clean and disinfect frequently touched surfaces daily.
- Get vaccinated and boosted as soon as get eligible.

All age groups, including neonates, can become infected with COVID-19. The same public health measures described for adults should be followed, except for children five years and under who are usually not required to wear masks, unless specific local requirements are required to mandate them, in which case they should be supervised.

Parents should encourage their children to take the above precautions, to help prevent getting and spreading COVID-19. COVID-19 has caused severe illness and death for a lot of people. If you get COVID-19, you also risk giving it to loved ones who may get very sick. Getting a COVID-19 vaccine is a safer choice. All currently authorised and recommended COVID-19 vaccines are safe and effective, and one vaccine over another is not recommended. At least 13 different vaccines are available.

After getting vaccinated, you might have some side effects, which are normal signs that your body is building protection. Common side effects are pain, redness, and swelling in the arm where you received the shot and tiredness, headache, muscle pain, chills, fever and nausea throughout the rest of the body. These side effects could affect your

ability to do daily activities, but they should go away in a few days.

The WHO says that the vaccines approved to date are expected to provide at least some protection against the new variants. Experts around the world are continuously studying how the new variants affect the behaviour of the virus, including any potential impact on the effectiveness of COVID-19 vaccines. But in the meantime, the important thing to do is to get vaccinated and continue measures to reduce the spread of the virus.

The Pfizer/BioNtech Comirnaty vaccine was listed for the WHO Emergency Use Listing (EUL) on 31 December 2020. The SII/Covishield and AstraZeneca/AZD1222 vaccines (developed by AstraZeneca/Oxford and manufactured by the Serum Institute of India and SK Bio respectively) were given EUL on 16 February. The Janssen/Ad26.COV 2.S developed by Johnson & Johnson, was listed for EUL on 12 March 2021. The Moderna COVID-19 vaccine (mRNA 1273) was listed for EUL on 30 April 2021 and the Sinopharm COVID-19 vaccine was listed for EUL on 7 May 2021. The Sinopharm vaccine is produced by the Beijing Bio-Institute of Biological Products Co Ltd, a subsidiary of the China National Biotech Group (CNBG). The Bharat Biotech BBV152 COVAXIN vaccine was listed for EUL on 3 November 2021.

WHO has approved the Pfizer and Moderna vaccines for children aged 6 months and older and the COVOVAX vaccine for children aged 12 years and older. Corbevax was approved by the Drugs Controller General of India (DCGI) for administration in children aged 5-12 years. Covaxin was cleared for use in those aged 6-12 years.

Getting your child vaccinated against COVID-19 reduces their risk of getting sick from COVID-19 and could reduce their risk of developing long COVID too. Just like adults, children need two doses of COVID-19 vaccine. They are fully vaccinated two weeks after they've had their second dose. Children should get their second dose at least 3 or 4 weeks after their first dose.

Pregnant women can receive COVID-19 vaccines. If not already vaccinated, pregnant women should have access to WHO EUL-approved vaccines, because COVID-19 during pregnancy puts them at higher risk of becoming severely ill and of giving birth to preterm babies.

WHO recommends that people at a high risk from COVID-19 are prioritized for booster doses. This can include children with certain health conditions. In South Asia, some countries that have made good progress in vaccinating high-risk groups are now offering boosters to lower risk groups, including children over the age of 12 years.

References:

1. Mahmood, S. E. (2023). The Novel Coronavirus. United Kingdom: Cambridge Scholars Publishing.
2. Coronavirus disease (COVID-19): Vaccines. <https://www.who.int> (Last accessed on 22nd January (2023)).

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PROSPECTIVE STUDY TO COMPARE CONVENTIONAL CHEMORADIO THERAPY WITH ACCELERATED HYPOFRACTIONATED CHEMORADIO THERAPY IN LOCALLY ADVANCED CARCINOMA OF OROPHARYNX

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ABSTRACT

Background: India accounts for higher incidence of oral and oropharyngeal cancer. For early stage chemoradiation or surgery are equally effective. For advanced stage chemoradiotherapy is the treatment of choice. Conventional chemoradiotherapy requires 2Gy per fraction, with 5 fraction per week. Accelerated repopulation sets in 4th weeks of conventional chemoradiotherapy. To overcome this effect hypofractionated chemoradiotherapy may be useful. This study was designed to compare conventional chemoradiotherapy with hypofractionated chemoradiotherapy and to compare Loco-regional response in two arms.

Materials and Methods: Total 70 patients (35 patients in each arm) were selected from the cross section of patients registered at tertiary care hospital with histologically proven squamous cell carcinoma of oral cavity from Oct 2018 to Sep 2020. Data obtained from study was compared to find out differences in term of response, acute and chronic treatment related toxicity.

Results: 50 percent patients(15) in arm A and 40 percent (12) in arm B had complete response, 70; 40 percent (12) in arm A and 33.3 percent (10) had partial response in arm B , 4.34 percent (1) in arm A and 16 percent (4) in arm B were lost to follow up.

Conclusions: Hypofractionated chemoradiotherapy is more effective comparing to conventional chemoradiotherapy with slight acute and late, but manageable treatment related toxicity as it significantly reduces treatment time up to 3 weeks.

Key words: Oropharyngeal carcinoma, hypofractionated, conventional, radiotherapy, chemotherapy

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INTRODUCTION

Head and neck cancer is the 7th most common type of cancer and 8th most common cancer related death in the world, more than 8 lakhs new cases of head and neck cancer are diagnosed each year. One of the major oncological problems in India is head and neck carcinoma. In India 20 per 1,00,000 are affected by oral cancer which account for about 30 % of all type of carcinoma [1]. In India head neck cancer is the most common cancer in men, about 1.93 lakhs new cases of head neck cancer are diagnosed and 1.14 lakhs deaths occurred due to head neck cancer, per year in

India. India contributes to up to 15.6% of the global cancer burden and 12.1% of global cancer deaths. (Globocon 2018)². India accounts for the highest incidence of lip and oral cancer in the world with over 1,00,000 cases registered annually. The incidence of head and neck carcinoma has been gradually increasing over the last three decades. Most of the head and neck cancer are triggered by alcohol and tobacco which together probably account for three quarter of cases. Tobacco smoking is associated with increased risk of all of the more common forms of head and

neck cancers. The risk among cigarette smokers may be ten or more times than that for non-smokers. Pipe or cigar smoking is associated with an even higher risk of oral cancers. Locally advanced head and neck cancer constitutes about 25% of cancer burden in clinical practice in developing countries like India. In India, about 70-75% cases of head and neck cancer present in a locally advanced stage with a significant portion in an inoperable stage. The incidence of head and neck carcinoma has been gradually increasing over the last three decade. Approximately 30 to 40 % of HNSCC patients present with early stage I/II disease. These patients are treated with curative intent using single modality treatment either radiation or surgery alone. A non-operative approach is favored for patients in which surgery followed by either radiation alone or radio-chemotherapy may lead to severe functional impairment. Usually Patients with HNC are at higher risk of becoming infected when multiple trips to the treatment center over many weeks are required (hindering protective self-isolation and social distancing), because of movement through multiple departments within the hospital, and because of the immunosuppressive effects of both radiation and chemotherapy. These risks may be mitigated by the adoption of treatment strategies that would minimize the need for systemic chemotherapy and/or reduce the number of RT fractions delivered. Shorter treatment courses may also be needed operationally if RT capacity is compromised because of potential staffing shortages and/or an increased demand for RT occurs in place of compromised surgical resources. In such instances, waiting times to commence treatment will inevitably increase with a well-recognized adverse effect on cancer control.³

Cancer of the oropharynx accounts for about 18,000 new cases annually in India (worldwide 93,000 cases).¹ Radiation therapy (RT) in combination with chemotherapy is the mainstay in the treatment for locally advanced oropharyngeal cancer, as radical surgery is associated with high morbidity and functional compromise. In the past two decades, the trend in radiation therapy had been to increase the number of fractions or in other words to reduce the dose

per fractions in order to decrease the severity of late effects by exploiting the difference in the shape of the dose–response relationship between early and late responding tissues. But recent studies, focused on alternative fractionation, are showing a renewed interest in dose fractions much larger than 2 Gy for curative radiotherapy.⁴

MATERIAL AND METHODS

In this study total 70 patients (35 for conventional arm A and 35 hypofractionated arm B) were registered between October 2018 to September 2020 with histologically confirmed squamous cell carcinoma of oral cavity by biopsy. The study was approved by the ethics committee of J K Cancer institute(G.S.V.M Medical College, Kanpur)and participants provided written informed consent. Patients accrued for study underwent pretreatment evaluation which included complete history, physical examination, and complete systemic examination. Patients were assessed their general condition by KPS and BSA. Their hematological assessment was done by complete hemogram, biochemical assessment of kidney and liver function, radiological assessment. Dental prophylaxis was done. Patients were staged according to AJCC staging system 8th. Based on the above assessment the patients for the study were selected depending on histologically proven cases of Carcinoma, Karnofsky Performance Status > 70, locally advanced oral cavity cancer Patients informed consent was taken. Patients having any of the following conditions were excluded from the study: Prior radiation, surgery or chemotherapy for the disease, poor general condition with Karnofsky Performance Status of <70, pregnant or lactating patient, associated medical condition such as renal disease, liver disease or heart disease And thus the patients fulfilling the Inclusion criteria and exclusion criteria were randomized into two Arms as followed:

Arm A: Received CRT as hypofractionated (300cGy per fraction), 5 fraction a week, off card after 39 Gy/13 fraction. Total of 60Gy/20 fraction with concurrent Inj. Cisplatin 100mg/m², 3 weekly d1 and d22

Arm B: Received CRT as conventional fractionation (200cGy per fraction), 5 days a

RESULTS

week, off cord after 46 Gy/23 fraction. A total of 70 Gy/35 fraction was given with concurrent Inj. Cisplatin 100mg/m² 3weekly on d1 and d22

From the commencement of treatment, all the patients included in the study were carefully and regularly assessed weekly during treatment. Radiation reactions were assessed by Radiation Therapy Oncology Group (RTOG) criteria. Tumor response (both primary and nodal response) were assessed by RECIST (1.1) response criteria 2 months after completion of Radiotherapy. The major study endpoints were tumor response, acute and late toxicities. Patients were followed monthly upto a minimum of 6 months. All the patients were followed up regularly on OPD basis for a period of at least 6 months, once every month after completion of the treatment. At every visit, each patient were clinically evaluated for local control of disease and treatment related complications. The patients were assessed for any evidence of distant metastasis during each follow up. On suspicion of any local recurrence, biopsy were taken for histopathology and correlated clinically. The data thus obtained was assessed, analyzed and compared to find out difference in all the groups in terms of tumor response, acute and late treatment related toxicity by using student t test/chi square test. The data thus obtained were assessed, analysed and compared to find out difference in both groups in terms of tumor response and quality of life. Continuous variables (age, haemoglobin) were presented as Mean \pm SD (standard deviation. Categorical variables were compared by using chi-square test. All the tests were two sided. P-value <0.05. were considered statistically significant. The data was analysed with SPSS stational software version -25. The mean median standard deviation standardized by quantitative statics. Descriptive statics were applied for patient profile and response assessment .

Total 70 patients are taken in both arms for trial

NUMBER	ENROLLED	DEFAULTED (EXCLUDED)	NET
CRT ARM	35	5	30
HRT ARM	35	5	30
TOTAL	70	10	60
Chi-square = 1.07 Degrees of freedom = 1 P value = 0.1577 Non-significant			

based on inclusion and exclusion criteria were randomized to arm A and arm B.

Table 1: Number of Patients in Each Arm

Table 1 represents the number of patients in each arm, Total number of patients in each arm A and arm B was 28, out of which 3 patients in arm A and 5 patients in arm B are defaulted from treatments, So excluded from study.

Table 2: Stages (group stage) of cancer in patients

Stages	Arm A (HRT) (n=30)		Arm B (CRT) (n=30)	
	No.	%	No.	%
II	3	10	2	10
III	7	23.3	6	20
IVA & B	20	66.6	22	70
Total	30		30	
Chi-square = 0.3722 Degrees of freedom = 2 P value = 0.8302, Non-significant				

Table 2 shows the Stages wise distribution, where in arm A was maximum stage IVA & B i.e. 66.6 percent followed by stage III i.e. 23.3 percent then Stage II i.e. 10 percent whereas in arm B maximum stage IVA & B was 70 percent followed by stage III i.e. 20 percent then Stage II i.e. 10 percent.

Table 3: Duration of treatment in days

DURATION	CRT ARM (n=30)	HRT ARM (n=30)
AVERAGE DURATION	55-60	32-35

Table 3 shows the Average duration of treatment, it was found that average duration of CRT arm was 55-60 days whereas average duration of HRT arm was days 32-35

Table 4: Tumor Response 2 Month after Treatment Completion

TUMOR RESPONSE 2MONTH AFTER TREATMENT COMPLETION	CRT ARM-B (n=30)		HRT ARM-A (n=30)	
	No.	%	No.	%
CR	15	50	12	40
PR	12	40	10	33.3
SD	00	00	00	00
PD	00	00	00	00
NO F/U	03	10	08	26.6
DEATH	00	00	00	00
TOTAL	30		30	

Chi-square = 2.788
Degrees of freedom = 2
P value = 0.2481, Non-significant

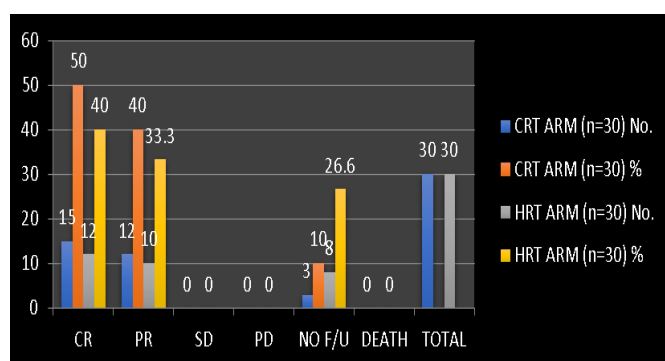


Table 4 shows the response of the treatment in patients, In case of HRT Arm B, 50 percent showed complete response, followed by 40 percent who showed partial response and 10 percent showed no response after follow-up. No patients showed progressive disease and stable disease in comparison to Arm A, 40 percent showed complete response, 33.3 percent showed partial response, and 26.6 percent had no response after follow up. Similarly, no patients showed progressive disease and stable disease.

DISCUSSION

Locoregional control of malignancies in the head-and-neck is of paramount importance for quality of life and survival. Uncontrolled HN disease progression causes significant morbidity, justifying a more aggressive approach.

Dose fractionation along with overall treatment time are expected to be key factors in the outcomes of definitive radiotherapy for early glottis cancer. Schedules with shortened overall treatment times have the potential advantage of minimizing the impact of accelerated repopulation. Overall treatment time is known to be related to locoregional control for head and neck cancers; an analysis of two trials suggested

that in node negative larynx cancer an additional dose of 0.8Gy/day is required to control tumor with increased treatment time^[11]. An acceleration in treatment time can be achieved by either hypofractionation or hyperfractionation with multiple treatments per day. As previously described^[9], radiobiological modelling based upon the linear quadratic model suggests similar \log_{10} cell kill and a lower late-effects BED for a schedule of 55G in 20 fractions over 26 days compared with a conventionally fractionated schedule of 70Gy in 35 fractions over 46 days. For late effects (using an α/β of 3Gy for late responding tissues) the BED_3 for a schedule of 55Gy in 20 fractions is 105.4Gy and for a schedule of 70Gy in 35 fractions is 116.6Gy respectively. This suggests a potential therapeutic gain for hypofractionation.

Our study shows that hypofractionated radiotherapy given to patients with HNSCC, results in similar loco-regional control (LRC) compared to conventionally fractionated schedule. The addition of concurrent chemotherapy in locally advanced stage with this hypofractionated regimen, therefore, offers an attractive method to improve tumor control probability and maximize service productivity.

In the meta-analysis of radiotherapy in carcinomas of the head and neck (MARCH), encompassing 15 phase III trials and 6,515 patients, there was 3.4% OS benefit at 5 years for altered fractionation versus conventional fractionation, with most benefit suggested for hyper fractionation.^[12] Concomitant chemotherapy with standard fractionation has repeatedly been shown to offer improved LRC and survival. Both altered fractionation and chemoradiotherapy have been shown to be better than conventional treatment schedules, and meta-analyses indicate that they confer about the same level of benefit in terms of LRC and survival.^{[4],[5],[12]}

Sanghera et al^[12]. analyzed 81 patients with squamous cell cancer of the larynx, oropharynx, oral cavity, and hypopharynx (International Union against Cancer Stages II-IV), who received hypofractionated radiotherapy with dose of 55 Gy in 20 fractions with concurrent chemotherapy. The 2-year local control rate was 75.4%. The 2-year OS rate was 71.6%, and the 2-year DFS rate was 68.6%.

A multi-institutional trial of hypofractionated intensity-modulated radiation therapy for early stage oropharyngeal cancer showed that moderately hypofractionated radiotherapy without chemotherapy for early

oropharyngeal cancer is feasible, achieving high tumor control rates and reduced the salivary toxicity.^[6] Another prospective trial done by Bakst et al. in carcinoma nasopharynx, using 2.34 Gy per fraction for a total of 70.2 Gy did not result in increased acute toxicities of the skin, mucous membranes, or salivary glands indicating that treatment was well-tolerated. Furthermore, no patients required significant treatment breaks nor did any patient require their chemotherapy to be withheld during radiation.^[10] Phase I dose escalation trial without concurrent chemotherapy indicated that 2.36 Gy per fraction for a total of 70.8 Gy was the maximal tolerable dose delivered to the gross tumor volume while using a simultaneous integrated boost for head and neck cancers.

In addition to the radiobiological perspective, the use of hypofractionation is appealing from both health economics and patient perspectives. Hypofractionated radiotherapy reduces both treatment time, number of fractions delivered and consequently cost; this eases the burden of treatment upon institutions. In addition, patients potentially benefit from the convenience of shorter schedules with fewer treatment visits required

Table 1 shows distribution of patients in each arm where total number of patients in arm A and arm B was 35-35, out of which 5 patients in arm A and 5 patients in arm B are defaulted from treatments, So total 10 patients were excluded from study.

Table 2 shows the Stages wise distribution, where in arm A was maximum stage IVA & B i.e. 66.6 percent followed by stage III i.e. 23.3 percent then Stage II i.e. 10 percent whereas in arm B maximum stage IVA & B was 70 percent followed by stage III i.e. 20 percent then Stage II i.e. 10 percent.

Table 3 shows the Average duration of treatment, it was found that average duration of CRT arm was 55-60 days whereas average duration of HRT arm was 32-35 days.

Table 4 shows the response of the treatment in patients, In case of HRT Arm B, 50 percent showed complete response, followed by 40 percent who showed partial response and 10 percent showed no response after follow-up. No patients showed progressive disease and stable disease in comparison to Arm A, 40 percent showed complete response, 33.3 percent showed partial response, and 26.6 percent had no response after follow up. similarly, no patients showed progressive disease and stable disease.

In study, we found that patients who achieve CR to treatment have not only improved locoregional disease control, but also improved overall survival. Our finding underscores the great importance to reduce overall treatment time for HN cancers.

Prolonged treatment time, for the purpose of this study was defined as completing treatment with a delay of more than 5 days. Patients who were able to complete their treatment within the stipulated time plus a 5 days allowance for logistical problems and public holidays were considered to the follow-up of the present study was relatively short and prevents us from commenting on the long term disease free survival, overall survival, and a more comprehensive evaluation of the late toxicities too. Another limitation of our study was the relatively smaller sample size and consequently, subgroup analyses could not be materialized.

CONCLUSION

The observations made in our study helped us arrive at a conclusion that Hypofractionated chemoradiotherapy is effective comparable to conventional chemoradiotherapy in tumor control and significantly reduces treatment time up to 3 weeks. In addition to the radiobiological perspective, the use of hypofractionation is appealing from both health economics and patient perspectives.

Hypofractionated radiotherapy reduces treatment time, number of fractions delivered and consequently cost; this eases the burden of treatment upon institutions. In addition, patients potentially benefit from the convenience of shorter schedules with fewer treatment visits required.

Hypofractionated accelerated chemoradiation to avoid delays in cancer treatment and reduce hospital visits during the peak of a pandemic. In addition, it may permit radical treatment when there is a shortage of radiotherapy capacity due to staff illness or quarantine. Furthermore, shortened radiotherapy schedules may be less vulnerable to treatment breaks.

REFERENCE

1. Bakst RL, Lee N, Pfister DG, Zelefsky MJ, Hunt MA, Kraus DH, *et al.* Hypofractionated dose-painting intensity modulated radiation therapy with chemotherapy for nasopharyngeal carcinoma: A prospective trial. *Int J Radiat Oncol Biol Phys* 2011;80:148-53.
2. GLOBOCAN 2018, New Global Cancer Data:

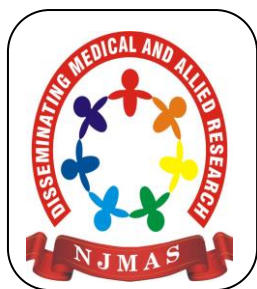
3. Jensen AR, Nellesmann HM, Overgaard J. Tumor progression in waiting time for radiotherapy in head and neck cancer. *Radiother Oncol.* 2007; 84: 5- 10.
4. Bray F, Ferlay J, Soerjomataram I, Siegel R L, Torre L A, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 2018; 68 (6): 394–424
5. Bourhis J, Overgaard J, Audry H, Ang KK, Saunders M, Bernier J, *et al.* Hyperfractionated or accelerated radiotherapy in head and neck cancer: A meta-analysis. *Lancet* 2006;368:843-54.
6. Brown JM. Exploiting the hypoxic cancer cell: Mechanisms and therapeutic strategies. *Mol Med Today* 2000;6:157-62
7. Brown JM. The hypoxic cell: A target for selective cancer therapy - Eighteenth Bruce F. Cain memorial award lecture. *Cancer Res* 1999;59:5863-70.
8. Castellsague X, Alemany L, Quer M, Halc G, Quiros B, Tous S, *et al.* (2016) HPV Involvement in Head and Neck Cancers: Comprehensive Assessment of Biomarkers in 3680 Patients. *J Natl Cancer Inst*, 108(6).
9. Lauve A, Morris M, Schmidt-Ullrich R, Wu Q, Mohan R, Abayomi O, *et al.* Simultaneous integrated boost intensity-modulated radiotherapy for locally advanced head-and-neck squamous cell carcinomas: II - clinical results. *Int J Radiat Oncol Biol Phys* 2004;60:374-87
10. Neeraj Sharma, Aseem Rai Bhatnagar, Kartick Rastogi, Rohitashwa Dana, Sandeep K Jain, S. K. Bhaskar : Hypofractionated accelerated radiotherapy compared with conventional radiotherapy of Squamous cell carcinoma of head and neck with concurrent cisplatin. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)* e-ISSN: 2279-0853, p-ISSN: 2279-0861. Volume 16, Issue 6 Ver. IV (June. 2017), PP 80-83
11. Overgaard J, Hansen HS, Specht L, *et al.* Five compared with six fractions per week of conventional radiotherapy of squamous-cell carcinoma of head and neck: DAHANCA6&7 randomised control trial. *Lancet* 2003;362:933–940
12. Sanghera P, McConkey C, Ho KF, Glaholm J, Hartley A. Hypofractionated accelerated radiotherapy with concurrent chemotherapy for locally advanced squamous cell carcinoma of the head and neck. *Int J Radiat Oncol Biol Phys* 2007;67:1342-51.

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EVALUATION OF SEROLOGICAL DATA ANALYSIS FOR DENGUE INFECTION IN WESTERN UP CASES

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ABSTRACT

Introduction: Dengue is endemic throughout the tropical world. The WHO has estimated that approximately 3 billion people live at risk of infection each year. The infection produces a spectrum of clinical manifestations, from mild influenza-like illness to dengue fever (DF) or severe dengue illness. This study was undertaken to determine the prevalence of dengue infection.

Material and Methods: A total of 2502 blood samples were tested for dengue infection, from January 2021 to December 2021, by NS1 Ag and IgM Ab ELISA test.

Results: A total of 2502 cases were tested, out of which 488 were found positive for dengue virus fever by NS1 Ag and IgM Ab (ELISA) method test. In the total positive sample, 30 were by NS1 Ag (ELISA), 458 by IgM Ag, and 4 samples by NS1 Ag along with IgM Ab were observed. Out of the total positive samples, 270 were men and 218 were females.

Conclusion: Our analysis here shows significant results in Indian adults with urban settings among the factors that are associated with higher odds of dengue. Better sanitation could be the focus of targeted interventions to reduce the prevalence.

Keywords: IgM, ELISA, Non-structural Protein

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INTRODUCTION

Dengue is endemic throughout the tropical world. The WHO has estimated that approximately 3 billion people live at risk of infection each year. The infection produces a spectrum of clinical manifestations, from mild influenza-like illness to dengue fever (DF) or severe dengue illness. The latter comprises either plasma leakage, which leads to hypovolemic shock or dengue shock syndrome and internal hemorrhage, or other organ failures, including encephalopathy [1]. The disease is caused by the dengue virus (DENV), which belongs to the genus *Flavivirus* of the *Flaviviridae* family [2]. DENV is a positive-sense, single-stranded RNA virus (approximately 11kb in length). DENV is composed of four antigenically distinct serotypes. Infection by a specific serotype confers lifelong immunity

against the specific serotype but not to the remaining three. DENV is transmitted to humans primarily by infected *Aedes aegypti* – the predominant epidemic vector. Laboratory diagnosis of dengue is of prime importance as clinical symptoms can be misleading due to their wide range [3]. Virus isolation provides the most accurate test results. Viral genome or viral antigen detection also provides evidence of infection but is not cost-effective. A relatively inexpensive method is serological assays [4]. The hyper incidence of dengue fever in such settings might be related to the specific demographic area and factors such as rural/semi-urban and gender, gender-specific data are inadequate because such studies are not routinely conducted and data reported or analyzed by most of the surveillance systems [5]. A few international studies that have

examined male and female dengue incidence have reported a significant association with the male gender [5,6]. A contrasting result of an Indian study suggested that seropositivity and hemorrhagic findings were reported with a greater propensity in females [7]. Hence, this study aims to understand the gender-based prevalence of dengue infection in an urban population of Western Uttar Pradesh in North India.

MATERIAL AND METHODS

Under the national vector-borne disease control program, a study was conducted in the Department of Microbiology, Lala Lajpat Rai Memorial Medical College, Meerut in the Western part of Uttar Pradesh, India from January to December 2021. In this study, Dengue cases of the age group 0 to 60 years from urban and rural backgrounds were included. As clinical diagnosis lacks specificity, a definitive diagnosis of dengue infection requires laboratory confirmation. ELISA was used for the diagnosis of Dengue. The samples were received from clinically suspected cases with the presence of any or all of the signs and symptoms of dengue.

This cross-sectional observational study was approved by University Ethics Committee "NO./SC-1/2022/6656". The samples were received from clinically suspected cases with the presence of any or all of the signs and symptoms of dengue, such as hemorrhagic manifestations in the acute phase of their illness (1–6 days). The blood samples were aseptically collected in the Viral Research and Diagnostic Laboratory at the Department of Microbiology. Serum was separated aseptically from the blood, and one half was immediately processed for Non-Structural Protein 1 (NS1) antigen and IgM Antibody Capture (MAC) ELISA, and the other half was stored at -80°C for further processing.

Laboratory Diagnosis

The diagnosis of cases was made by either/or both positive by NS1 antigen (NS1 Ag) and IgM antibody (IgM Ab) MAC ELISA. All the sera were subjected to ELISA same day as per the manufacturer's instructions QUALISA Dengue NS1 (NIV Dengue MAC ELISA Kit (version 2.4) as described below in brief.

For NS1 ELISA, a total of 50 μL sample diluent was added to each well and 100 μL of negative, positive controls and samples were also added followed by serum samples in the corresponding wells. The plate was incubated for 60 mins at 37°C . It was then washed to remove any unwanted and unbound antigens and blot dried. Further, 100 μL of the conjugate was added to each well, and the plate was again incubated for 30 min at 37°C followed by washing and drying. Further, 100 μL of the substrate was added, and the plate was again incubated for 15 min in dark at room temperature. Finally, 100 μL of stop solution was added, and absorbance was read at 630 and 450 nm.

For IgM ELISA, a total of 50 μL of negative and positive controls, and 50 μL diluted serum samples (1:100) were added to corresponding wells and incubated at 37°C for 60 min. The plate was washed 5 times and dried. Further, 50 μL antigen and plate incubated for 60 min at 37°C . After incubation, washing was done, and then 50 μL antibodies were in each well and incubate for 60 min at 37°C after incubation washes 5 times and add 50 μL HRP and incubate at 37°C for 30 mins after the incubation wash 5 times and add 100 μL substrate and incubate for at room temperature for 10 mins. 100 μL of stop solution was added, and absorbance was read at 630 and 450 nm. The data entry and result analysis were done manually.

Statistical Analysis

Microsoft Excel was used to create a database. Questionnaire information was inputted into IBM's SPSS version 18.0 and was used for analysis.

RESULTS

A total of 30 (1.20%) patients were found seropositive for dengue by NS1 and 458 (18.32%) by IgM ELISA out of the total 488 (19.5%) patients [Table 1]. Among the Seropositive patients the proportion of males was higher than females [Table 2]. This difference between male and female preponderance among all seropositive cases was significant. Among all the seropositive cases 270 males and 218 females were from urban areas, 5 males and 3 females belonged to rural

areas [Table 2 and 3]. It might be because the sample may have been collected within a week of the illness when IgM antibodies against the virus were not formed. IgM antibodies were detected in 458 cases only, and these cases might have been reported after 1 week of illness [Table1]. A marked rise in the number of dengue-positive cases was observed from January 2021 to December 2021 in both epidemics of 2021. In both epidemics, the males were more commonly affected than females in the epidemic 2021. Out of the positive cases 163 (33.40%) were below 18 years of age & 325 (66.6%) from above 18 years of age.

Table 1: Cross table between NS1 & IgM ELISA among total Seropositive Dengue fever Cases (n= 488)

Test name	Positive (%)	Negative (%)	Total Seropositive (%)
NS1	30 (1.2%)	4 (0.82%)	30 (6.8%)
IgM ELISA	458 (18.3%)	00 (00%)	458 (%)
Total	488 (19.5%)	4 (0.82%)	488 (100%)

NS1: Non-structural protein 1; IgM (MAC): IgM antibody capture; ELISA: Enzyme-linked immunosorbent assay

Table 2: Gender wise distribution of suspected Dengue cases (n= 2502)

Gender	Total Samples n =2502	Positive Samples n =488	NS1 Positive n=30	IgM Positive n=458	IgM & NS1 both n =488
Male	1198 (47.9%)	270 (55.4%)	16 (53.4%)	254 (55.45%)	4 (0.9%)
Female	1304 (52.1)	218 (40.7%)	14 (46.6%)	204 (44.55%)	0 (00%)

NS1 Ag: Non-structural protein 1 antigen; IgM Ab: IgM Antibody

Table 3: Locality wise distribution of seropositive Dengue cases (n= 488)

DISCUSSION

The hyper incidence of dengue fever in such settings might be related to the specific

Gender	Rural	Urban
Male	5(1.03%)	265(54.31%)
Female	3 (0.61%)	215(44.05%)
Total	8(1.63%)	480(98.37%)

demographic area and factors such as rural/semi-urban and gender, gender-specific data are inadequate because such studies are not routinely conducted and data reported or analyzed by most of the surveillance systems.[5] A few international studies that have examined male and female dengue incidence have reported a significant association with the male gender.[5,6]

A contrasting result of an Indian study suggested that seropositivity and hemorrhagic findings were reported with a greater propensity in females.[7] Hence, this study aims to understand the gender-based prevalence of dengue infection in an Urban population of Western Uttar Pradesh in North India. Dengue Virus is endemic throughout the tropical world. The WHO has estimated that approximately 3 billion people live at risk of infection each year. This study is a detailed overview of Dengue infection in Meerut and adjoining areas from January to December 2021. In this study the highest positive samples were seen in the age group of 21-30years by NS1 Ag and IgM Ab ELISA TEST, this is the same as Bandy Upadhyay et al. [8] Chakravarti and Kumara [7] also reported maximum prevalence in the same age group. The maximum number of positive patients detected by NS1 Ag among adults is 61.7% and by IgM is 73.8%. The maximum number of positive children detected by NS1 Ag is 38.2 and by Ig M is 26% in this study. The prevalence of positive cases increased during the post-monsoon season (September to November) in this study. Sarkar et al. also show the same results in Bangladesh. Dengue and chikungunya are two of the major vectors borne viral diseases that cause significant morbidity in India. For effective prevention and control strategies for dengue it is important to understand the various social, economic, and demographic risk factors that increase the odds of these infections in the population.[9] [Our analysis here shows significant results in Indian adults aged 21-30 and below, dengue is predominantly associated with urban settings [10-12]. Among the factors that are associated with higher odds of dengue. Better sanitation could be the focus of targeted interventions to reduce the prevalence. Sample timing is an important consideration in the serologic diagnosis of dengue virus infections [13]. Early laboratory diagnosis of acute dengue virus infection is important to provide appropriate treatment for the patients and to prevent potential dengue outbreaks [14,15]. Dengue and chikungunya are two of the major vectors borne viral diseases that cause significant morbidity in India.

CONCLUSION

Our analysis here shows significant results in Indian adults with urban settings among the factors that are associated with higher odds of dengue. Better sanitation could be the focus of targeted interventions to reduce the prevalence. Early laboratory diagnosis of acute dengue virus infection is important to provide appropriate treatment to the patients and to prevent potential dengue outbreaks.

REFERENCES

1. mLiu JW, Shaio MF, Yang KD. Implications of previous subclinical dengue infection but not virus load in dengue haemorrhagic fever. *FEMS Immunol. Med. Microbiol.* 48(1), 84–90 (2006).
2. WHO. DENGUE: Guidelines for Diagnosis, Treatment, Prevention and Control – New Edition. WHO, Geneva, Switzerland (2009).
3. Westaway EG, Blok J. Taxonomy and evolutionary relationships of flavivirus. In: Dengue and Dengue Haemorrhagic Fever. Gabler DJ, Kuno G (Eds). CAB International, London, UK (1997).
4. Anker M, Arima Y. Male female differences in the number of reported incident dengue Fever cases in six Asian countries. *Western Pac Surveill Response J* 2011; 2:17 23.
5. Ooi EE. Changing pattern of dengue transmission in Singapore. *WHO Regional Office for South- East Asia (Dengue Bulletin)* 2001; 25:40 5.
6. Chakravarti A, Arora R, Luxemburger C. Fifty years of dengue in India. *Trans R Soc Trop Med Hyg* 2012; 106:273 82.
7. Ghosh P.K., Mohanty M., Bandyopadhyay K.K., Painuli D.K., Misra A.K.. Growth, competition, yield advantage and economics in soybean/pigeonpea intercropping system in semi-arid tropics of India: I. Effect of subsoiling. *Field Crops Research* 2006 (96):1 80-89.
8. Rahman MA, Halder HR, Rahman MS, Parvez M. Poverty and childhood malnutrition: Evidence-based on a nationally representative survey of Bangladesh. *PLoS ONE* 2021; 16(8): e0256235.
9. Chua KB, Mustafa B, Abdul Wahab AH, Chem YK, Khairul AH, Kumarasamy V, et al. A comparative evaluation of dengue diagnostic tests

based on single-acute serum samples for laboratory confirmation of acute dengue. *Malays J Pathol.* 2011;33(1):13–20.

10. WHO. Dengue hemorrhagic fever: diagnosis, treatment, prevention and control. 2nd edition. Geneva: World Health Organization. WHO cited 2012 May 6; Available from: <http://www.who.int/csr/resources/publications/dengue/Denguepublication/en/>
11. Gibbons RV, Vaughn DW. Dengue: an escalating problem. *BMJ.* 2002;324(7353):1563–66.
12. Gubler DJ, Meltzer M. Impact of dengue/dengue hemorrhagic fever on the developing world. *Adv. Virus Res.* 1999; 53:35–70.
13. Blacksell SD, Mammen MP, Thongpaseuth S, Gibbons RV, Jarman RG, Jenjaroen K, et al. Evaluation of the Panbio dengue virus nonstructural 1 antigen detection and immunoglobulin M antibody enzyme-linked immunosorbent assays for the diagnosis of acute dengue infections in Laos. *Diagn Microbiol Infect Dis.* 2008;60(1):43–49.
14. Kumarasamy V, Wahab AHA, Chua SK, Hassan Z, Chem YK, Mohamad M, et al. Evaluation of a commercial dengue NS1 antigen-capture ELISA for laboratory diagnosis of acute dengue virus infection. *J Virol Methods.* 2007;140(1-2):75–79.
15. Bessoff K, Phoutrides E, Delorey M, Acosta LN, Hunsperger E. Utility of a commercial nonstructural protein 1 antigen capture kit as a dengue virus diagnostic tool. *Clin. Vaccine Immunol.* 2010;17(6):949–53.

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CLINICAL PRESENTATION OF PATIENTS PRESENTED WITH DENGUE FEVER DURING AN EPIDEMIC IN KARACHI

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ABSTRACT

Introduction: Dengue is one of the debilitating infectious diseases spread by mosquitoes, involves many countries during the rainy season, and causes mortality and hospitalizations because of disease severity and complications.

Material and Methods: This cross-sectional study involved 135 cases of dengue fever. Convenient sampling was used.

Results: The majority of patients were males and the majority were between 21-40 (54.81%) years. Family history of dengue was positive among (45.18%) patients at the same time. Fever was found among (99.25%), severe headache (16.22%), diarrhoea (15.55%), Itching (12.59%), melena (8.14%), hematemesis (7.40%), severe cough 5.92%, haematuria (3.70%), eye pain (2.9%), bleeding gums (2.22%), bleeding nose (2.22%) and menorrhagia (2.22%). Frequent signs were facial flushing (97.77%), erythema (93.33%), and rashes (23.70%). Mortality was (1.48%). Dengue serology was done among (18.51%) of patients; (68%) were positive and (32%) were negative, 6th day was the minimal day on which dengue serology was positive. Pleural effusion was found (18.18%), Acalculus cholecystitis (40.54%), and fluid in the abdominal cavity (62.14%) of patients. The majority of patients took Antimalarial and NSAIDS.

Conclusion: This study reported fever as the commonest symptom whereas rare clinical manifestations of pleural effusion and Acalculus cholecystitis also. Clinical and lab features demonstrate the importance of timing for performing dengue serology. The widespread practice of prescribing medicines is also reported. Avoiding unnecessary use of antibiotics and antimalarial medications which affects platelet count can reduce the use of transfusion of platelets and minimize hospitalization. These vigilant measures play a pivotal role in the reduction of hospitalization and health care budget as well.

Key words: Dengue, fever, dengue hemorrhagic fever, dengue shock syndrome

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INTRODUCTION

Dengue fever is an acute febrile illness, caused by the female mosquitoes *Aedes aegypti* and *Aedes albopictus*, dengue virus belongs to the arbovirus family. It has various modes of illnesses starting from asymptomatic to a fatal illness, but frequently presenting with fever, headache, myalgia, body aches, retro-orbital pain, vomiting, abdominal pain, rashes, thrombocytopenia, and leukopenia. (1) Dengue is a disease of variable severity ranging from a fleeting viral illness (undifferentiated fever) to Dengue fever (DF: a

characteristic disease without hemorrhagic manifestations) to Dengue hemorrhagic fever (DHF: DF with hemorrhagic manifestations) to Dengue Shock Syndrome (DSS: DHF with shock) (2, 3). Dengue has four serotypes one distinct type produces lifelong immunity to that specific type but infection with another type leads to severe disease because of antibody-enhanced auto-destruction. (4) During the 40 years of experience with dengue in the Western Pacific as South East Asia region, two important epidemiological patterns have been recognized, first DHF/DSS

appeared most frequently in areas where multiple dengue serotypes are endemic. The usual pattern is that of sporadic cases or small outbreak that brings the disease to the attention of public health authorities the disease then establishes a pattern of epidemic activity every 2-3 years, and a second pattern is observed in areas of low endemicity where multiple dengue serotypes may be transmitted at relatively low rates of infection. A cyclical pattern of increased transmission coinciding with the rainy season has been observed in rainy season in some countries same is observed here and cooler temperature affects its transmission. (5) Dengue fever was first recognized in Pakistan in 1994. (6) At this point this illness imposed a great impact on the health and economy in Pakistan in terms of the administration of antibiotics and antimalarial drugs by healthcare providers and unnecessary hospitalizations and transfusion of blood products, platelets, and fresh frozen plasma because of the fear of bleeding and not recognizing signs and symptoms of dengue fever. This study was conducted to observe the different epidemiological patterns of dengue fever in this epidemic, its clinical features and clinical manifestations, management, and outcomes, and suggestions for decreasing the burden of the disease in the future.

MATERIAL AND METHODS

Study area and population:

This cross-sectional one-year study involved cases of clinically suspected dengue or dengue-like illness in Zia Uddin Medical University Hospital North Nazimabad. Data was collected after taking informed verbal consent.

Sampling technique and sample size:

A convenient sampling technique was used. Around 135 cases were recruited in the study.

Inclusion and exclusion criteria:

All those patients were recruited under a single medical consultant team working in the hospital. Those who didn't give consent were excluded. All the patients who presented with fever were selected during the study period regardless of age and gender.

Questionnaire and data collection procedure:

Data was collected by the principal investigator and team of medical consultants themselves. Performa developed to collect the data which consisted of 3 parts, first part included sociodemographic characteristics such as age, gender, and family history of dengue at the same time, 2nd part included signs and symptoms of patients presented with dengue fever, and clinical examination whereas 3rd part consists of lab investigations and imaging studies done during the management of cases. The usual symptoms of patients were fever, facial flushing, erythema, conjunctival and pharyngeal congestion, acute lymphadenopathy, presence of rash, epigastric pain, and tenderness or any bleeding episodes. We excluded malaria in all patients by using a malarial parasite (MP) test, and excluded chest infection by doing a chest x-ray if patients had a history of cough and if have symptoms of urine infection then a urine detailed report was done to exclude urinary tract infection (UTI).

Ethical consideration and confidentiality:

Informed verbal consent was taken from the patients and all the patients were assured about their confidentiality and anonymity during the whole process of data collection and publication.

Statistical analysis:

Data was collected, entered, and analyzed by using SPSS. Frequencies and percentages were calculated for variables.

RESULTS

A total of 135 cases were included in the study. Table: 1 showed the demographical profile of patients. About 65.92% of patients were male and 34.81% were females, 54.81% of patients were belongs to 21 to 40 years of age whereas about 2.96% were more than 60 years of age.

Family history of dengue fever during this season was positive among 45.18% of patients, which is not the case in other mosquito-borne diseases like malaria, it is because of the habitat of the Aedes mosquito and its feeding behavior.

Table 2: Shows the frequency of symptoms related to dengue. The most common symptom was fever among 99.25% of patients. Only one patient didn't have a fever and was on

immunosuppressive therapy (data not mentioned in table), but all other symptoms and signs and family history were positive in that case. We had mortality in two cases (1.48%) including that patient on immunosuppression therapy. Frequency of other symptoms such as Itching 12.59%, eye pain 2.9%, severe headache 16.22%, mild cough 15.55%, severe cough 5.92% which was not relieved by common remedies, diarrhea 15.55%, melena 8.14%, blood in stools 1.48%, blood in urine 3.70%, blood in vomiting 7.40%, bleeding gums 2.22%, bleeding from nose 2.22%, menorrhagia 2.22%, total of bleeding patients excluding rashes 37(27.40%), seizures 1(0.74%).

Table 3: Shows the frequency of signs and clinical examination findings. Facial flushing was most frequent sign 132(97.77%), erythema 126(93.33%), rashes, 23.70%, petechial rashes 7.40%, diffuse rash 12.59%, both rashes 3.70%. cervical lymphadenopathy was most frequent among all nodes 88.88%, inguinal and femoral 21.48%, pre auricular 8.14%, post auricular 1.48% and popliteal lymph nodes 1(0.74%). Oral thrush 1(0.74%), petechia on palate 1(0.74%), splenomegaly 7(5.18%), hepatomegaly 3(2.22%).

Table 4: Shows the frequency of lab investigation findings. Almost 12.59% of patients had TLC less than 2000 whereas 47.40% had TLC between 2000-4000. On recovery we observe lymphocytosis. The lowest platelet count observed was 6000 and that patient had mucosal bleeding and remained in ICU because of hemodynamic instability (data not included in the table). Platelet counts of less than 10000 were observed in 3 (2.22%) and less than 100000 was 77(57.03%) while more than 1500000 was 30(22.22%). ALT was done in 35 patients and more than 100mg/dl was found in 17(48.57%), the highest value was found at 1300mg/dl and 2880mg/dl in those patients who had mortality. aPTT was done in 28 patients who had bleeding and only 10(35.71%) had results more than 31, while the highest no was 98.1 and 55.8 in mortality cases. Dengue serology was done in 25 (18.51%) by ELISA, and positive were in 17 (68%) while negative in 8(32%) patients, the minimal day on which dengue serology was positive was the 6th day, signs and symptoms were same in all patients regardless the

positivity of serology. Chest X-ray was done in 33(24.44%), and 6(18.18%) had pleural effusion which was resolved without any intervention. Abdominal ultrasound done in 37(27.40%), a-calculus cholecystitis was found in 15(40.54%), plural effusion 11(29.79%), fluid in abdominal cavity 23(62.14%). Drug history was available for 130 (96.29%) patients, 25(18.51%) did not take any medication while a large no patients took Antimalarial, the most common Artemether, and Chloroquine, and among antibiotics, the most common was Augmentin and third-generation cephalosporin and Quinolones, and combination of both, one patient took antiviral as well while a large no patients take NSAIDs as well.

Table 1: Sociodemographic characteristics of patients with dengue fever (n=135)

Characteristics	Frequency	Percentage
Admitted patients	107	79.25
Visited clinics	28	20.74
Gender		
Male	89	65.92
Females	47	34.81
Age		
11-20 years	40	26.62
21-40 years	74	54.81
41-60 years	17	12.59
1 >60 years	4	2.96
Family history of dengue		
Positive	61	45.18
Negative	74	54.81
Mortality	2	1.48

Table 2: Frequency of symptoms of patients with dengue fever (n=135)

Symptoms	Frequency	Percentage
Fever	134	99.25
Nausea	15	11.11
Vomiting	107	79.25
Body aches	91	67.40
Abdominal pain	57	42.22
Severe headache	22	16.22
Eye pain	4	2.9
Itching	17	12.59
Flu, runny nose	3	2.22
Mild cough	21	15.55
Severe cough	8	5.92
Diarrhea	21	15.55
Melena	11	8.14
Blood in stool	2	1.48
Blood in vomiting	10	7.40
Bleeding gums	3	2.22

Table 3: Clinical examination findings among dengue patients (n=135)

Examination findings	Frequency	Percentage
Facial flushing	132	97.77
Erythema	126	93.33
Rashes	32	23.70
Petechial rash	10	7.40
Diffuse rash	17	12.59
Both petechial and diffuse rash	5	3.70
Petechia on palate	1	0.74
Subconjunctival hemorrhages	1	0.74
Lymphadenopathy		
Cervical	120	88.88
Inguinal/femoral	29	21.48
Pre-auricular	11	8.14
Post-auricular	2	1.48
Popliteal	1	0.74
Hepatomegaly	3	2.22
Splenomegaly	7	5.18
Epigastric tenderness	43	31.85
Congested throat	9	6.66
Tonsillitis	3	2.22
Oral thrush	1	0.74

Table 4: Laboratory investigations of patients with dengue fever (n=135)

Investigations	Frequency	Percentage
TLC (n=135)		
< 2000	17	12.59
2000-4000	64	47.40
4001-6000	36	26.66
6001-11000	18	13.33
Platelets (n=135)		
<10000	3	2.22
10000-50000	32	23.70
50001-100000	28	20.74
100001-150000	42	31.11
>150000	30	22.22
ALT (n=35)		
Up to 39	10	28.57
40-100	8	22.85
>100	17	48.57
PT (n=26)		
Up 31	23	88.46
>31	3	11.53
aPTT (n=28)		
Up 31	18	64.28
>31	10	35.71
Malaria parasite (n=121)		
Negative	121	100
ICT Malaria (n=76)		
Negative	76	100

Table 5: Imaging findings among dengue fever patients

Imaging modalities	Frequency	Percentage
Chest X ray (n=33)		
Normal	26	78.78
Right-sided pleural effusion	4	12.12
Left-sided pleural effusion	1	3.03
Bilateral plural effusion	1	3.03
Prominent Interstitial markings	1	3.03
Ultrasound abdomen (n=37)		
Normal U/S	12	32.43
Hepatomegaly	10	27.02
Splenomegaly	9	24.32
A-Calculus cholecystitis	15	40.54
Cholecystitis with stone	1	2.70
Right pleural effusion	10	27.02
Bilateral plural effusion	1	2.70
Liver abscess	1	2.70
Fluid in the abdominal cavity		
Pelvis	14	37.83
Morrison's pouch	7	18.91
Splenorenal angle	2	5.40

Table 6: Serological findings among dengue fever patients (n=25)

Variables	Frequency	Percentage
Dengue serology (n=25)		
Positive	17	68
Negative	8	32
Positive Dengue serology in relation to duration of illness (n=17)		
6-10 th day of illness	10	58.82
>10 th day of illness	7	41.17

Table 7: Medications used by dengue patients before hospital admission (n=130)

Drugs	Frequency	Percentage
Antibiotics	49	37.69
Antimalarials	15	11.53
Antibiotics & antimalarials	40	30.76
Antivirals	1	0.79

Figure 1: Rash associated with dengue fever



DISCUSSION

The rainfall period was between the 27th of July and to 13th of September during that year of our study. After that, we see a rapid increase in dengue cases in Karachi. (7) At the end of June we have only 5 cases and at the end of October we had 57 cases and the number of cases increases a lot thereafter. This rainy season favored the breeding pattern of *Aedes aegypti*. Behavior and clinical features are almost the same but facial flushing, erythema, lymphadenopathy, pleural effusion, ascites, and Acalculus cholecystitis were the distinct features of this series. Unlike the series of pediatric patients reported from South East Asia (1, 8) none of our patients went on to develop DSS. This difference can probably be explained based on the different pathophysiology in different age groups. The mortality in our patients was 1.48% (2 patients), which is similar to that reported in a series except for one study in Pakistan where mortality was 28% in a series of 11 patients. (4, 9, 10) One of our patients who died was on steroids for another illness both our patients who had fatal illnesses died of hemorrhagic complications rather than DSS. Among the two mortalities, one patient was elderly and on steroids, and had no fever but all other features of dengue, while the other was a young girl with seizures and unconsciousness, but brain imaging was normal, serological confirmed case, in both cases, we had highest ALT and aPTT. We can state that bleeding in dengue is not solely the low platelet count but also the qualitative defect in platelets that leads to bleeding. In our series there was one patient with a platelet count of 9000 who had no bleeding and one patient with 230000 platelets had bled. In general, we noticed similar clinical features as reported by other studies in this area (4, 9, 10) (including a higher prevalence in males) but found a much higher prevalence of facial flushing (97.77%), diffuse erythema (93.33%), cervical lymphadenopathy (88.88%) and abdominal pain (42.22%) then most of the other symptoms. Although we did not perform Dengue serology in all patients, we demonstrated that the possibility of the test based on IgM antibodies by ELISA being positive is very linearly related to the duration of symptoms. (11, 12) None of our

patients tested before the 6th day of the illness was positive while all patients tested after the 10th day of onset were positive. (13, 14)

We manage all patients with aggressive fluid therapy, antipyretics, and antiemetics, maximum hospital stay was of 3 days. We diagnosed most of the patients on clinical grounds without doing too much dengue serology and serology is not always necessary while there is an endemic going on but since we don't know the spectrum of dengue and other illnesses like dengue in Pakistan we cannot estimate the total burden of disease in this area. We transfused platelets to only 4 patients though 25.92% of patients had platelets less than 50 thousand. Later during the epidemic, when doctors and patients had become aware of the epidemic and IgM serology became freely available, we noticed many tests being done in earlier periods of illness reported as negative. This gave false reassurance that the patient did not have Dengue fever. One of the most disturbing results of our study, which we have not seen reported before, is the very high prevalence of (80.28%) prescription of unnecessary drugs including antimalarial, antibiotics, and NSAIDs to these patients, even when the epidemic was at its peak. These drugs are not only unnecessary and ineffective in DF, some of them are contraindicated in these patients with suppressed bone marrow and bleeding risk (i.e. NSAIDs, Fansidar). We have also demonstrated the previously reported association of DF with pleural effusion (15) (mostly right-sided in our series), localized ascites (4, 13, 16), and Acalculus cholecystitis (17, 18). The current presentation of cases also raises certain questions that are we dealing with dengue or there are some other co circulating viruses that caused hemorrhagic fever since we don't have serology we cannot diagnose them i-e West Nile virus, chikungunya, yellow fever, etc. (19, 20)

CONCLUSION

This large series of DF patients during a major outbreak in Pakistan describes the clinical and laboratory features and demonstrate the importance of timing for performing the serology. We also report the widespread practice of prescribing unnecessary and potentially harmful

medicines to these patients. The take home message is to avoid antibiotics and antimalarials in cases of acute febrile illnesses and be vigilant for transfusion of platelets and Fresh Frozen Plasmas (FFP's) and minimize hospitalizations to decrease the burden of disease among common people and health care resources in the country. These vigilant measures play an active role in participation in the eradication of dengue, and mosquito borne diseases at the government and community levels keeping in mind that the secondary infection is always severe than primary infection itself.

REFERENCES

1. Salahuddin N, Ali F. Dengue fever outbreak in Karachi, 2005- A clinical experience. *Infectious diseases Journal* 2005; 14:115-117.
2. Chakravarti A, Kumaria R. Eco-epidemiological analysis of dengue infection during an outbreak of dengue fever, India. *Virology Journal* 2005; 2: 32-37.
3. Guzman MG, Kouri G. Dengue: an update. *Lancet Infectious Diseases* 2001; 2: 33-42
4. Akram D.S, Ahmad S. Dengue fever. *Infectious diseases Journal* 2005; 14: 124-125.
5. Deen JL, Harris E, Wills B, Balmaseda A, Hammond SN, Rocha C, et al. The WHO dengue classification and case definitions: time for a reassessment. *Lancet* 2006;368(9530):170-3.
6. Qureshi JA, Notta NJ, Salahuddin N, Zaman V, Khan JA. An Epidemic of dengue fever in Karachi- Associated clinical manifestations. *J.Pak.Med.Assoc* 1997; 47:178-180.
7. Pasha O. Viral Hemorrhagic fever in Karachi 2005. *Infectious Diseases Journal of Pakistan* 2005; 14(4):133-134.
8. Ahmed A. Diagnosing Dengue Fever. *Infectious diseases Journal* 2005; 14:129-132
9. Ayyub M, Khazindar AM, Lubbad EH, Barlas S, Alfi AY, Al-ukayli S. Characteristics of dengue fever in a large public hospital, Jeddah, Saudi Arabia. *J Ayub Med Coll Abbottabad* 2006; 18(2):9-13.
10. Tariq WUZ, Khurshid S, Hussain AB, Ghani E. Outbreak of Dengue fever in Mangla and Mirpur area. *Pak J Pathol* 2006; 17(3): 122-124.
11. Chakravarti A, Kumaria R. Eco-epidemiological analysis of dengue infection during an outbreak of dengue fever, India. *Virology Journal* 2005; 2: 32-37.
12. Guzman MG, Kouri G. Dengue: an update. *Lancet Infectious Diseases* 2001; 2: 33-42.
13. Ali N, Nadeem A, Anwer M, Tariq WUZ, Chotani RA. Dengue fever in malaria endemic areas. *JCPSP* 2005; 16(5): 340-342.
14. Sekawi Z, Selamat MI, Jamal F. Fight against dengue: the Malaysian Scenario. *Infectious diseases Journal* 2005; 14:126-128.
15. Laferl H. Case report: Plural effusion and ascites on return from Pakistan. *The Lancet* 1997; 350: 1072.
16. Rigau-Perez JG, Clark GG, Gubler DJ, Reiter P, Sanders EJ, Vorndam AV. Dengue and dengue haemorrhagic fever. *The Lancet* 1998; 352:971-977.
17. Rigau-Perez JG. Severe dengue: the need for new case definitions. *Lancet Infect Dis* 2006; 6: 297-302.
18. Sood A, Midha V, Sood N, Kaushal V. Acalculous cholecystitis as an Atypical Presentation of Dengue fever. *AJG* 2000; 95(11): 3316.
19. Bakar A, Ahsan HAM, Ahsan M, Mamun AA, Karim SR. Emergence of Dengue in Bangladesh. *Pak Armed Forces Med J* 2004; 54(2): 147-150.
20. Ansari JK, Siddiqui M, Hussain T, Baig I, Tariq WUZ. Outbreak of dengue hemorrhagic fever in Karachi. *Pak Armed Forces Med J* 2001; 51(2): 94-98.

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CHILDHOOD ASTHMA KNOWLEDGE AND AWARENESS AMONG SAUDI PARENTS: A NARRATIVE REVIEW

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ABSTRACT

Background: Asthma is a chronic disease that is known for its inflammatory process, it causes in long term airway obstruction which leads to difficulty in breathing. Management of asthma can be affected by many factors which need to be considered. One of those factors is knowledge and awareness of parent, caregivers, and guardians.

Objective: To evaluate asthma knowledge and awareness among Saudi Parent, caregivers, and guardians.

Material and Methods: Search of the web using google scholar and PubMed database. These databases were searched for knowledge and awareness among parents, caregivers, and guardians in Saudi Arabia. Result: After much search and filtering of the papers that were found concerned with asthma awareness or knowledge, only nine articles were related directly to the topic in question or had information on awareness or knowledge among their article objectives.

Conclusion: Knowledge and awareness are essential in the management of asthmatic children. Parent, caregivers, and guardians in Saudi Arabia appear to have moderate knowledge and awareness of childhood asthma. Therefore, it is imperative to effectively increase the knowledge and awareness of this group of the community to better control asthma.

Key words: Childhood asthma, awareness, knowledge, parents, awareness, caregivers

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INTRODUCTION

Asthma, also known as bronchial asthma is characterized by chronic inflammatory process of the airways which begin early in life.[1] This chronic inflammation leads to difficulty in breathing due to airway obstruction.[2] The bronchial airways are mainly affected by this chronic inflammation which in turn makes the airways more sensitive to allergens.[3] More than three hundred million cases of asthma worldwide making it one of the most common chronic illnesses.[4] Approximately about fourteen percent of the children worldwide experienced symptoms related to asthma. [5] According to some studies which were done in the past thirty years in Saudi Arabia, children with asthma had a prevalence ranging from 8% to 25%.[6] Children

with asthma typically present with cough, dyspnea, wheezing, and tightness of the chest. [7] These symptoms most commonly occur during the night and in early mornings. There also seems to be some seasonal effects on asthma which exacerbate asthma symptoms, and this occurs mostly during autumn and spring seasons, and this is attributed to the pollination process which increases during this time of the year.[8] Apparently any age group can be affected by asthma. In Saudi Arabia asthma is very common and thus is a serious disease. Asthma does not only affect the person physiologically, but it also has an impact on the person's quality of life, such as increased hospital emergency room visits, hospitalisation, taking days off of work or school, as well as taking effort and time from parents and

caregivers. In turn the whole community is affected.[9-12] One of the leading causes of absenteeism from school is poorly controlled asthma, and as a consequence, missing working days by parents so they can take care of their ill children, and therefore economy may be adversely affected as well as the expenditure on health care will increase.[13] In order to control and prevent exacerbations of asthma which are acute in nature, education and awareness of the patients is of importance. Knowledge pertaining to asthma has improved in the last two decades in particular technology and pathophysiology. Therefore it is possible nowadays to control bronchial asthma. Patient's education and increasing their awareness about what asthma is and how to manage it, it will help in increasing patient's compliance. [14-16] It is known that there are many factors contributing in poorly controlled asthma, but still knowledge and awareness of the disease could play a major role.[17] Therefore, this review aims to evaluate the parental knowledge and awareness of childhood asthma.

MATERIAL AND METHODS

This study involved distribution two hundred and thirty-one self-administered questionnaires to guardians and parents who attended with their children in general pediatric and pediatric pulmonology outpatient clinics at King Abdulaziz Medical City for National Guard and King Abdullah Specialist Children's Hospital, Riyadh, Saudi Arabia, through the period from August 2016 to March 2017.

Search strategies

Asthma is very common in Saudi Arabia, and many children are afflicted with this disease. Therefore, parents caregivers or guardians awareness plays a major role in the management of asthma and preventing its exacerbation as well as controlling the symptoms on daily basis.

The search strategy was based on web data-bases Google Scholar and PubMed and locally published articles. For Google Scholar, advance search was used 1) childhood asthma knowledge and awareness among Saudi Parents, caregivers, or guardians 2) with the exact phrase asthma awareness also asthma knowledge. For PubMed, all field and MeSH Terms search was used 1)

Asthma awareness and knowledge and 2) Asthma awareness and knowledge among parents 3) Asthma awareness and knowledge among Saudi parents 4) Asthma awareness and knowledge among Saudi 5) Asthma awareness and knowledge among caregivers 6) Asthma awareness and knowledge among guardians, through number 1 to 6 the search was done individually and exchange ably. All articles that were found using these criteria were thoroughly checked to see if they match the topic in question.

Study selection

The search presented case reports and scientific publications from 1953 to 2021. It included studies that were written in English language. An attempt was made to include published and unpublished articles in Arabic language but there was none to include in this review. First, All studies that were found in the initial literature search were checked thoroughly to find the relevant studies based on abstracts and titles. Then, the relevant studies that were selected revised in a way so that just original articles about awareness of parents who had asthmatic children in Saudi Arabia. In the present review only articles which are related to asthma knowledge and awareness among Saudi parents, guardians, and caregivers were included, the studies that are included in this review were published between 2006 and 2021. The exclusion was made based on the fact that the study is a review, full text article not available, incomplete data, and studies that are not assessing knowledge and awareness of childhood asthma.

Included studies

The search of Google scholar and PubMed resulted in a total of 254 studies. After manual check and screen of the titles, abstracts, and the full texts of the studies, thirty studies were related to asthma awareness. However, after much filtering of these studies and excluding those which are repeated, only nine studies were concerned about asthma knowledge and awareness among parents, guardians, and caregivers who had asthmatic children. Thus, these studies were included and reviewed comprehensively (Table 1).

Table 1: Cross-sectional studies included

Author	Title	Sample size	Study participants
Al-Harbi, Saleh et al (27)	Awareness regarding childhood asthma in Saudi Arabia	1039	Individuals from various educational levels and backgrounds from Riyadh, Dammam, Al Khobar, Mecca, and Medina
Eman AlOtaibi et al (18)	Knowledge and practice of parents and guardians about childhood asthma at King Abdulaziz Medical City for National Guard, Riyadh, Saudi Arabia	231	Guardians and parents of asthmatic children aged between 1 and 14 years
Al-Anazi A, et al (19)	Asthma in the pediatric population: Level of perception among the parents and guardians	90	Guardians/parents, accompanying the asthmatic children to the ED of King Saud Bin Abdulaziz University
Donques AA et al (20)	Knowledge and Perception of Asthmatic Patients and their Family towards Asthma Disease and Management in King Saud Medical City, Riyadh, KSA	55	All participants who have children aged between 0-12 years old diagnosed with asthma or any history of asthma regardless of gender and nationality.
Abu-Shaheen etal. (23)	Perceptions and Practices in Parents of Saudi Children with Asthma: A Cross sectional Survey	292	Parents of Asthmatic children between the ages 3-15 years who visited the two tertiary care medical centers in Riyadh city
A.M. Al-Binali (24)	Asthma knowledge and behaviours among mothers of asthmatic children in Aseer, south-west Saudi Arabia	171	All mothers of children admitted with bronchial asthma to the department of paediatrics of Aseer Central Hospital over a 1-year period
Ahmed A. Albarraq (26)	Assessment of Caregiver's Knowledge and Behaviour in the Management of Pediatric asthma	25	The caregivers of children admitted with symptoms of asthma to the pediatric departments of various general hospitals in Jazan Province
Alhammad AM et al. (28)	Parental attitude and knowledge towards asthma care measures for their children in Saudi Arabia	177	Parents and their children with asthma who attended the outpatient pediatric asthma care clinics

RESULTS

Asthma awareness among parents, guardians, and caregivers who have asthmatic children

The study groups consisted of 165 participants (71.4%) who were mothers and 40 participants (17.3%) who were fathers, with remaining being relatives and guardians. Those who participated and completed the questionnaire, amounted for a response rate of 88.84%. Most of the information participants had, they received it from their paediatricians, family physicians, written material, and the Internet, respectively. In this study they found that 79.6% of participants have moderate knowledge. Among mothers the knowledge was found higher than other groups when taking the total mean of knowledge into account ($p=0.019$). About half of the parents and guardians had misconceptions about asthma medications. Participants had their best knowledge in the aspects associated with asthma. Even though participants in this study have ample amount of knowledge concerning symptoms, aggravating factors, and the background of asthma, it is notable that their knowledge regarding medication is lacking.[18]

In another study, Likert scale questionnaire was distributed to 90 parents / guardians who presented to the emergency department (ED) of King Saud Bin Abdulaziz University. The questionnaire consisted of 90 questions. The participants that were included are those who visited the ED with their asthmatic children who are 1 year or older and they were admitted to ED because of any symptoms related to asthma as their main complaint. The study excluded children who are not asthmatic and those who are less than one year old. The result was that Saudis constituted 95.3% and non-Saudis were 4.7%. Males were 28% of the participants and females accounted for seventy-two percent. Sixty-eight percent of the respondents noted that they had sufficient knowledge about asthma and thirty-one percent stated otherwise. The questionnaire had three categories, the first one was concerning myths and beliefs toward asthma, the second category was about the level of the knowledge about the disease, the third category was about associated aspects of asthma knowledge. As a result, when considering all categories combined it showed a

score of eighty-five in the questionnaire. Their result showed that most of their participants were aware of asthma, and that was unexpected finding. Thus, the study mentioned that this unexpected finding might be due to small sample size. Furthermore, the study noted that even with participants that are knowledgeable emergency department visits were high. The study concluded that even though individual category scores were high, there was a negative association between the total score of the sum categories and ED visits.[19] In a cross sectional descriptive study that was performed on 20 of May 2015, coinciding with the World Asthma Day in King Saud Medical City in Riyadh. This activity was attended by around one hundred participants. After giving asthma awareness by healthcare providers, questionnaires were distributed to the participants. During this days they received 55 responses from participants, male participants constituted 50.94%, Saudi were 67.92%. The study population were those who have asthmatic children or relatives who are between the ages of 0-12 years. The questionnaire was prepared in two languages (Arabic and English), and each questionnaire has four parts: 1) Demographic data 2) general questions such as ideas towards clinical symptoms and asthma 3) Risk factors and education 4) health education received by participants. The relationship between parents beliefs and ideas about asthma and the health education they received about asthma showed that there a significant relationship ($P=0.009$, chi-square=9.35). Furthermore, no relationship was found between the parents beliefs and idea with the health education received whether to increase or improve information about asthma and skill development of cure with P value >0.05 and $df=8$. However, it was clear that there is a substantial significance of relationship between what the parents believe and what ideas they conceive about asthma can be cured (P value=0.02); asthma is a genetic disease (P value=0.04); asthma is psychological disease (P value=0.01) and Ventolin usage can leads to addiction (P value=0.05) with the Kind of health education provided.

A study conducted at the emergency departments (ED) of two tertiary care medical centers in

Riyadh city and outpatient clinics, it was done during 2015 on two-hundred ninety-two parents who presented with their asthmatic children aged 3-15 years. This study was cross-sectional in design. To assess practices and perceptions of parents concerning asthma and how to manage it in their children, a self-administered questionnaire was used. The questionnaire consisted of three parts: 1) demographics, symptoms of uncontrolled asthma, and asthma attacks consequences 2) Perception and 3) practices towards asthma and its management by parents. Anyway, in this study it was found that (57%) of children used β -agonists inhalers while only (13.3%) used corticosteroids in the form of inhalers. For prophylaxis against acute attacks of asthma, leukotriene antagonists was used by only 6.5% of the participating children who have asthma. There is an indication that parents are concerned that their children may become dependent on these medications well as the adverse effects of these medications in general, mostly they concerned with adverse effects that might occur with long term usage of such medications especially steroids which may be attributed to their poor knowledge in that matter, also differences in culture, and lack of partnership in the process of management. It is well known that to minimise poorly controlled asthma burden, asthmatics must adhere to inhaled corticosteroids which may be the most effective method health care providers can give.[22] It was concluded that parents who participated in this study had misconceptions relating to asthma medications use and thus they embraced feeble practices in its management.[23] A study that targeted mothers who were admitted with their children who have bronchial asthma. The study in question was conducted in Aseer Central Hospital at the paediatrics department which lasted for over one year, from 1 July 2006 to 30 June 2007. It included 171 mothers who were admitted with their children who have asthma. The mothers were between the ages of 22 to 45 years and their children were between the ages of 3 to 11 years. The duration in which they had asthma was ranging from one to eight years. The Chicago Community Asthma Survey was used in its Arabic version. The questionnaires and the interview was conducted by trained nurses who speak Arabic.

They got a response rate of about 90 percent. It was observed that mothers knowledge about bronchial asthma symptoms was the least in chest tightness feeling (57.9) and dyspnea (48.5%).

Most of the mothers were not acquainted with how bronchial asthma occurs (84.4%). Weather changes, common cold and insecticides were recognised by mothers as aggravating factors (82.5%, 94.7%, and 61.4% respectively). Approximately 60.2% of mothers showed poor knowledge score. Risk factors of poor knowledge among mothers of asthmatic children were identified by the study which include: young age of the mothers and their illiteracy status and the sex of the child being female. Notably mothers who were older had more knowledge than those of younger age. In the aforementioned study, there was a significant relationship between asthma management behaviour and the knowledge of the mothers.[24]

A cross-sectional study was conducted during the period from April 2016 to December 2017 in different governmental hospitals in the Jazan Directorate. Participants were selected randomly out of those who were admitted with asthmatic children. The survey was performed using a questionnaire containing 35 items, the questionnaire used was an adaptation of the Chicago community Asthma Survey.[25] The included caregivers, either female or male who were admitted with their children who had asthma. The study included 250 participants who were randomly selected. The study demonstrated that most parents were unaware why paediatric asthma occurs, but concerning triggers of asthma attacks caregivers showed a good knowledge. Female caregivers showed good knowledge towards what could trigger asthma which could be dust mite, tobacco, animal dander, cold air, and cold drinks (89.2%, 81.6%, 48.8%, 43.2%, and 31.6%, respectively). Poor behaviour in the management of childhood asthma was due to factors such as decreased knowledge on childhood asthma, education levels of caregivers, low socioeconomic status, and poor living conditions. In this study, it was observed that there is a strong association between the management of childhood asthma and the caregivers knowledge about asthma.[26] In another cross-sectional study, in

2014 in Riyadh, Dammam, and Jeddah a structured questionnaire was randomly distributed to 1039 Saudis. The questionnaire had three parts 1) demography 2) questions related to asthma 3) self education about the disease. This survey was in Arabic language, after data collection it was translated, data entry was performed, then analysed. Their result was that 67% of their total participants considered it to be a fatal disease, 90.1% of participants said that it is a chronic disease with bouts of acute flares when the patient is exposed to allergen. Concerning Asthma knowledge the study illustrated that the older the participant the more they are aware of the disease which was significant ($P < 0.001$, CI [-0.60, 1.41]). When putting into account the gender as a factor there was no significant differences in awareness ($P = 0.052$, CI [-0.01, 1.22]). On the other hand, level of education was highly significant ($P < 0.001$, CI [0.83, 1.57]), the more educated the person the more he/she is aware of this disease.[27] Lastly, a prospective study that was conducted from May 2016 to July 2017 which was concerned about asthma control and assessment of parental knowledge towards asthma. About 238 parents participated in the study, only 177 completed the survey. In this study, about 79.1% of the parents knew the names of their children's medications and 78% knew the doses. However, concerning the usage of inhaled steroid and salbutamol only 37.9% and 54.2% knew how to use them, respectively. In this study, it was demonstrated that parents who had educations not reaching the college level, their children were more prone to have uncontrolled asthma (unadjusted OR, 2.02; 95% CI, 1.02–3.68).[28]

DISCUSSION

Asthma is considered as one of the leading public health problems which is one of the reasons for the enormous morbidity, mortality, and hospitalisation all over the world, Saudi Arabia included. Though Saudi Arabia has made guidelines for the prevention and treatment of childhood asthma, still there is much to be done towards the delusions and views of parents of asthmatic children.[19] Awareness of the parents and their knowledge of the exacerbating factors

and medications of their asthmatic children can play a role in minimising morbidity, lowering incidence of uncontrolled asthma attacks, and better the quality of life of their children.[29] Asthma management needs to be integrated with asthma education to get optimal benefit to minimise the morbidity related to asthma and improve the techniques of using inhalational medication and knowledge relating to asthma. [20,21] In the included studies, it was noted by Alhammad & Al Enizi et al. that there is a significant association between the parents level of education and control of asthma, the less educated a parent is the more likely that the child's asthma will be uncontrolled.[28] In a similar study conducted by Albarraq, a cross sectional study that was performed on May 2015, suggested that poor knowledge of childhood asthma, poor living conditions, low socioeconomic class, and education level of the caregiver can in fact affect the management of childhood asthma negatively.[26] Furthermore, other studies put into consideration gender as a factor affecting awareness of childhood asthma, but it was observed that there is no significant differences in awareness between genders.[27] A study conducted at the ED of two tertiary hospitals, reported that the parents who participated in their study had misconceptions about asthma treatment and thus it affected their practices in the management of asthma adversely.[23]

Study limitations

There are limitations which are related to the studies and those that are related to the review: most of the included studies were done in either hospitals or outpatient clinics, and thus may not reflect day to day life situations and may not represent the all asthmatic children. The sample size of most of the studies was small. Most of the studies included had self-administered questionnaires and thus recall bias cannot be ruled out. An attempt was made to include all studies that have been studying the awareness among Saudi parents, caregivers, and guardians but most research papers were not mainly concerned with awareness but rather other factors which included awareness in its midst.

CONCLUSION

Asthma Knowledge and awareness are vital in the control and management of childhood asthma. Knowledge and awareness towards childhood asthma is still lacking among Saudi parents. On the other hand, misconceptions and wrong beliefs can adversely affect the control of asthma in children and the way it is managed. These findings should pave the way for public health officials and decision makers to organise campaigns locally to further improve the knowledge and awareness among the public and especially among those who have asthmatic children. Saudis seem to have moderate level of knowledge and awareness regarding childhood asthma. Thus, it is of importance to provide more education to increase the knowledge and practices of the parents, caregivers, and guardians of asthmatic children.

REFERENCES

1. Kuti BP, Omole KO, Kuti DK. Factors associated with childhood asthma control in a resource-poor center. *J Family Med Prim Care*. 2017;6(2):222.
2. Blum CL. Role of chiropractic and sacro-occipital technique in asthma treatment. *J Chiropr Med*. 2002;1:16–22.
3. Washington DM, Curtis LM, Waite K, Wolf MS, PaascheOrlow MK. Sociodemographic factors mediate race and ethnicity-associated childhood asthma health disparities: a longitudinal analysis. *J Racial Ethn Health Disparities*. 2018;5(5):928–38.
4. Masoli M, Fabian D, Holt S, Beasley R; Global Initiative for Asthma (GINA) Program. The global burden of asthma: executive summary of the GINA Dissemination Committee report. *Allergy*. 2004;59(5):469–478.
5. Wa Somwe S, Jumbe-Marsden E, Mateyo K, et al. Improving paediatric asthma care in Zambia. *Bull World Health Organ*. 2015;93(10):732–736.
6. Al-Dawood KM. Epidemiology of bronchial asthma among school boys in Al-Khobar city, Saudi Arabia. *Saudi Med J*. 2001;22(1):61–66.
7. Uluç NN, Özdemir Ö. The attitude, knowledge, and behavior of family physicians about childhood asthma in Sakarya province. *Turk Arch Peditr*. 2019;54(4):225.

8. Su MW, Lin WC, Tsai CH, Chiang BL, Yang YH, Lin YT, et al. Childhood asthma clusters reveal neutrophil predominant phenotype with distinct gene expression. *Allergy*. 2018;73(10):2024–32.
9. Stewart WF, Ricci JA, Chee E, Morganstein D. Lost productive work time costs from health conditions in the United States: Results from the American Productivity Audit. *J Occup Environ Med*. 2003;45:1234–46.
10. Al-Mobeireek A. Prescribing for asthmatic children in primary care. Are we following the guidelines? *Saudi Med J*. 2003;24:1274.
11. Dashash NA, Mukhtar SH. Prescribing for asthmatic children in primary care. Are we following guidelines? *Saudi Med J*. 2003;24:507–11.
12. Leiria Pinto P, Cordeiro M, Pinto R. Adolescents and school asthma knowledge and attitudes. *Allergol Immunopathol (Madr)* 1999;27:245–53.
13. Özdemir Ö, Sürücü M. Assessment of knowledge levels of elementary and high school teachers on childhood asthma. *Istanb Med J*. 2019;20(4) : 273-8
14. Peterson-Sweeney K, McMullen A, Yoos HL, Kitzman H. Parental perceptions of their child's asthma: Management and medication use. *J Pediatr Health Care*. 2003;17:118–25.
15. Warman KL. Management of asthma exacerbations: Home treatment. *J Asthma*. 2000;37:461–8.
16. Guevara JP, Wolf FM, Grum CM, Clark NM. Effects of educational interventions for self management of asthma in children and adolescents: Systematic review and meta-analysis. *BMJ*. 2003;326:1308–9.
17. Alharbi SA, Kobeisy SA, AlKhater SA, Alharbi AS, Alqwaiee MM, Alotaibi FN, Alawam KA, Alahmadi TS, Al-Somali FM, Almaghamsi TM, Yousef AA. Childhood asthma awareness in Saudi Arabia: five-year follow-up study. *J Asthma Allergy*. 2020;13:399–407.
18. AlOtaibi E, AlAteeq M. Knowledge and practice of parents and guardians about childhood asthma at King Abdulaziz Medical City for National Guard, Riyadh, Saudi Arabia. *Risk Manag Healthc Policy*. 2018 Apr 13;11:67-75.
19. Al-Anazi A, Moamary MAI, Ismaeli T, Alanazi ANawash, Olayan LH, Alanazi AMayof, et al. Asthma in the pediatric population: Level of perception among the parents and guardians. *International Journal of Medicine and Public Health*. 2015;5(1):14-18.
20. Donques AA, Alaki E, Almazyad W, Almutairi A. Knowledge and Perception of Asthmatic Patients and their Family towards Asthma Disease and Management in King Saud Medical City, Riyadh, KSA. *J Clin Respir Dis Care* 2017; 3: 128.
21. Barthwal MS, Katoch CDS, Marwah V. Impact of optimal asthma education programme on asthma morbidity, inhalation technique and asthma knowledge. *J Assoc Physicians India* 2009; 57: 574-579.
22. Van Sickle D, Wright AL: Navajo perceptions of asthma and asthma medications: clinical implications. *Pediatrics*. 2001, 108:11.
23. Abu-Shaheen A, AlFayyad I, Nofal A, Al-Tannir M, AlMadaney M, Heena H. Perceptions and Practices in Parents of Saudi Children with Asthma: A Cross-Sectional Survey. *Cureus*. 2018;10(2):e2213.
24. Al Binali, A.M., Mahfouz, A.A., Al Fifi, S., Naser, S.M. & Al Gelban, K.S.. Asthma knowledge and behaviours among mothers of asthmatic children in Aseer, south-west Saudi Arabia. *EMHJ - Eastern Mediterranean Health Journal* 2010; 16 (11):1153-1158,
25. Grant EN, Turner-Roan K, Daugherty SR, Li T, Eckenfels E, Baier C, et al. Development of a survey of asthma knowledge, attitudes, and perceptions: The Chicago community asthma survey. Chicago asthma surveillance initiative project team. *Chest* 1999;116:178S-83S.
26. Albarraq AA. Assessment of caregivers' knowledge and behavior in the management of pediatric asthma in Jazan, Saudi Arabia. *Saudi J Health Sci* 2019;8:98-104
27. Al-Harbi S, Al-Harbi AS, Al-Khorayyef A, et al. Awareness regarding childhood asthma in Saudi Arabia. *Ann Thorac Med*. 2016;11(1):60-65.
28. Alhammad, AM, Alajmi, G, Al Enizi, A, et al. Parental attitude and knowledge towards asthma care measures for their children in Saudi Arabia. *Pediatric Pulmonology*. 2020; 55: 2901–2907.
29. Zhao J, Shen K, Xiang L, Zhang G, Xie M, Bai J, Chen Q. The knowledge, attitudes and practices of parents of children with asthma in 29 cities of China: a multicenter study. *BMC Pediatr*. 2013;13(1):1–6.

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