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Welcome



‘Comparison of Chronic Suppurative Otitis Media in Rural and Urban Primary School Children in Bangladesh’

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Declaration

- This article was published in Journal of Otolology and Laryngology (JLO) in 2014.

Introduction

- Chronic Suppurative Otitis Media (CSOM) is a common childhood community health disorder in many developing countries including Bangladesh.
- In children, it may cause significant delays in speech, cognitive, educational and psychological development.
- It is typically a persistent disease, insidious in onset, often capable of causing severe destruction and irreversible damage of middle ear and
- Clinically manifests with deafness and discharge.

Contd.

Risk factors:

- Poverty
- Overcrowding
- Poor hygiene
- Lack of breast feeding
- Poor nutrition
- Passive smoking
- Male sex
- Bottle feeding
- Nasopharyngeal colonization with potentially pathogenic bacteria
- Inadequate or unavailable health care
- Eustachian tube dysfunction etc

Contd.

- In Bangladesh, bathing in canals, rivers, and ponds allows contaminated water to enter the middle ear through perforations before they have had time to heal.
- Otoscopic finding of CSOM includes the presence of a perforation of the tympanic membrane with or without otorrhoea.
- CSOM has been classified into tubo-tympanic(mucosal) and attico-antral (squamous) disease; the later category is usually associated with cholesteatoma.

Perforations of TM



Tubo-tympanic



Attico-antral



Contd.

- Prevalence of CSOM was reported to be between 7.39% to 29.50% in the last three decades in Bangladesh.
- Recently, 12.44% of the rural school going children of Bangladesh aged 4-13 years were reported to suffer from CSOM and most of them were from lower income group.

Contd.

- Majority of patients with chronic ear disease came from communities living in subsistence agricultural or slum areas of Nigeria.
- Recently, researchers concluded that 8% of the rural and 2% of the urban population in Bangladesh had CSOM.
- In Nigeria, 6% of rural school going children had CSOM whereas no case was found among urban school going children.

Contd.

- A scientific survey among primary school going children in Tanzania found that 9.44% of rural and 1.3% of urban children had CSOM ($p < 0.001$).
- In New Delhi, India, 19.6% of children of lower socioeconomic status were found to have ear diseases whereas only 2.13% of children of higher socioeconomic status suffered from the same.



Contd.

- Most of such studies on the prevalence and risk factors of CSOM dealt with either rural or urban primary school children.
- But a few study was directly intended to compare prevalence of CSOM in rural and urban primary school children.

Objectives

- To determine the **prevalence** of CSOM in rural and urban primary school children in Bangladesh.
- To see and compare the association of **CSOM** of rural and urban primary school children with few **socio-demographic factors**:
 - i) Parent's/guardian's occupation
 - ii) Annual income
 - iii) Housing
 - iv) Total family members
 - v) Sanitation
 - vi) Maternal education
 - vii) bathing habit



Methodology

Study design: A Cross-sectional comparative study

Population: Children (KG to Class V)

Rural: Two primary schools of Shibpur upazilla, Narsingdi district, Bangladesh

Urban: Two primary schools from Dhaka Metropolitan city, Bangladesh.

Sampling: Random sampling of the schools

Contd.

- **Period:** July 2007 to November 2010
- **Sample size:** 681 rural children and 964 urban children
- **Data collection:**
 - After taking written informed consent from the parents/guardians, Clinical ENT check up and otoscopic examination of the sample population was done by doctors trained in ENT

Contd.

- Parents/guardians were interviewed regarding parent's/guardian's occupation, annual income, housing, total family members, sanitation, maternal education, bathing habit using a pre tested questionnaire.
- Presence of perforation in the tympanic membrane with or without otorrhoea was taken as an evidence of CSOM.
- Recent traumatic perforations were excluded.
- No microscopic confirmation was done.

Contd.

- Housing of the study population was categorized according to local terminology as:
 - I) **kachha** – A house with mud in floor and walls with a non-brick roof;
 - II) **Semi paka** – Floor is brick and walls/roof are non-brick, and
 - III) **Paka** – Floor, walls are brick and roof are brick/non-brick.

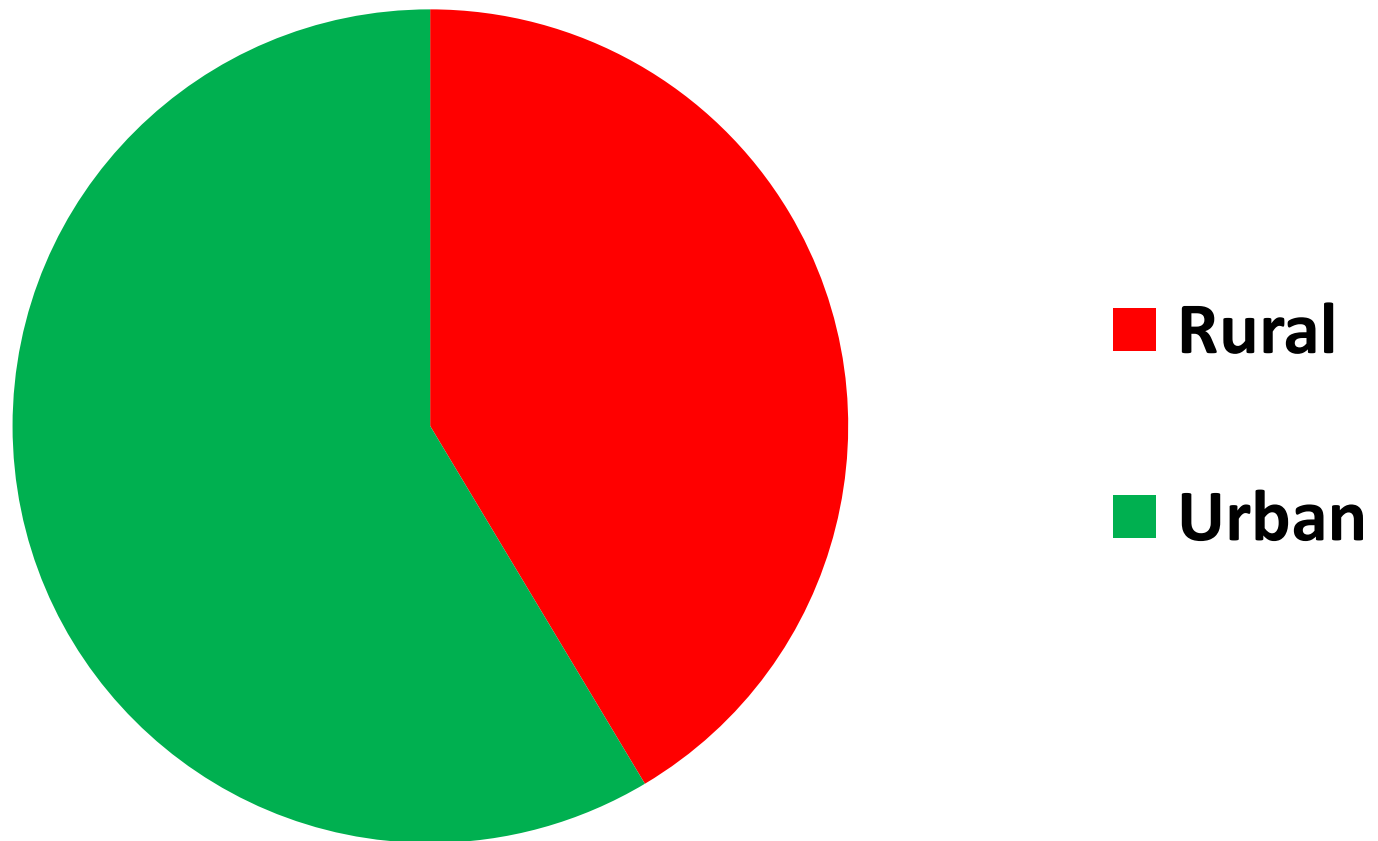
Contd.

- Ethical clearance was taken from the competent authority.
- The collected data were coded and were analyzed using Statistical Package for Social Science (SPSS).
- Appropriate statistical tests (Chi-square) of significance were applied.
- A p-value <0.05 was considered statistically significant, while $p<0.001$ was considered highly significant.

Study Place

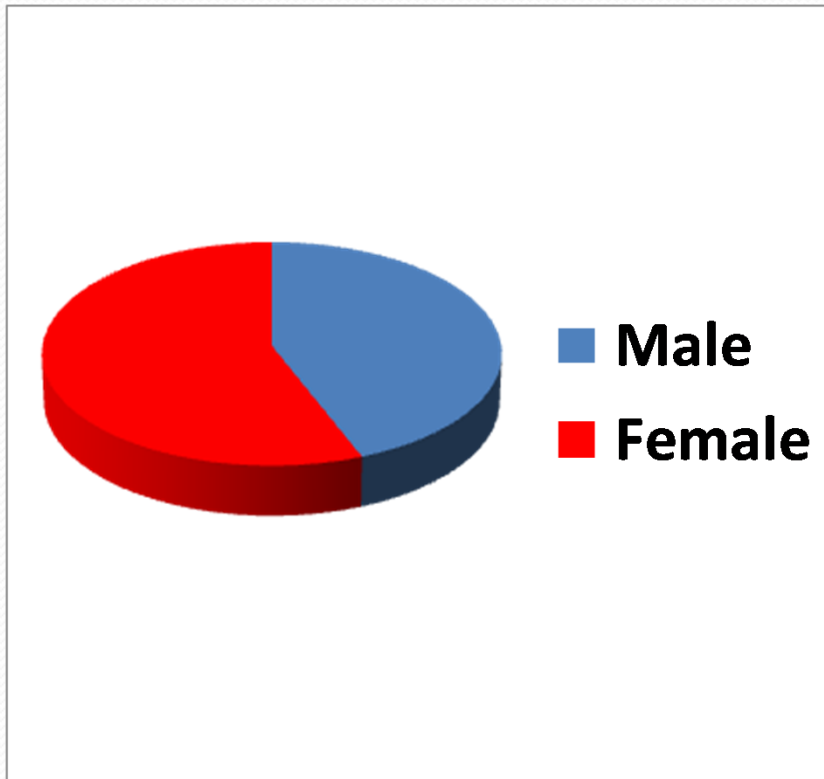


Distribution of CSOM among rural and urban children (n=1645)



Sex Distribution

Rural



Urban

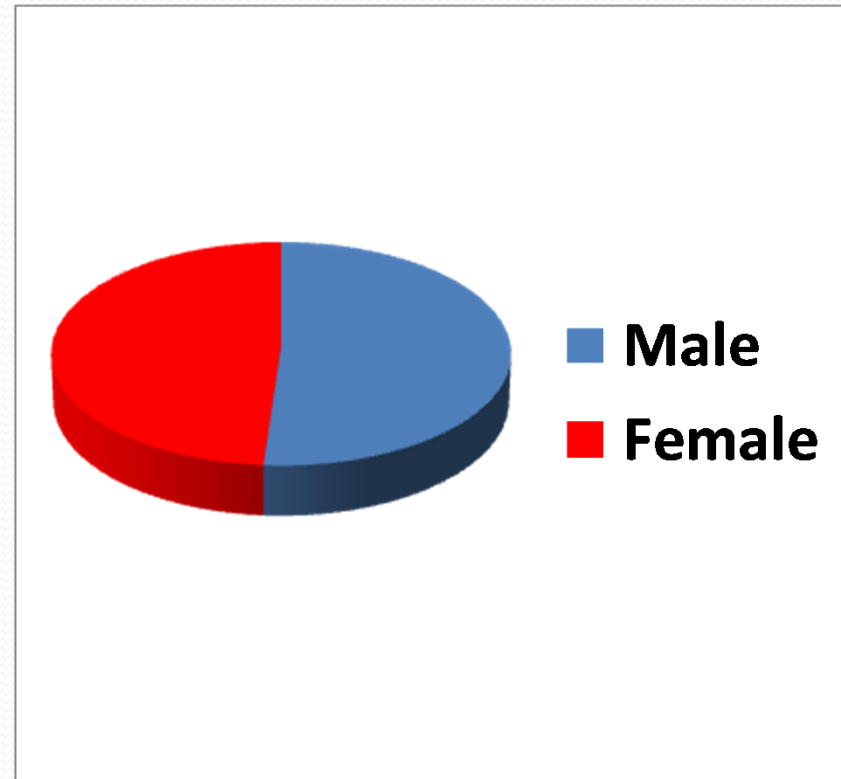


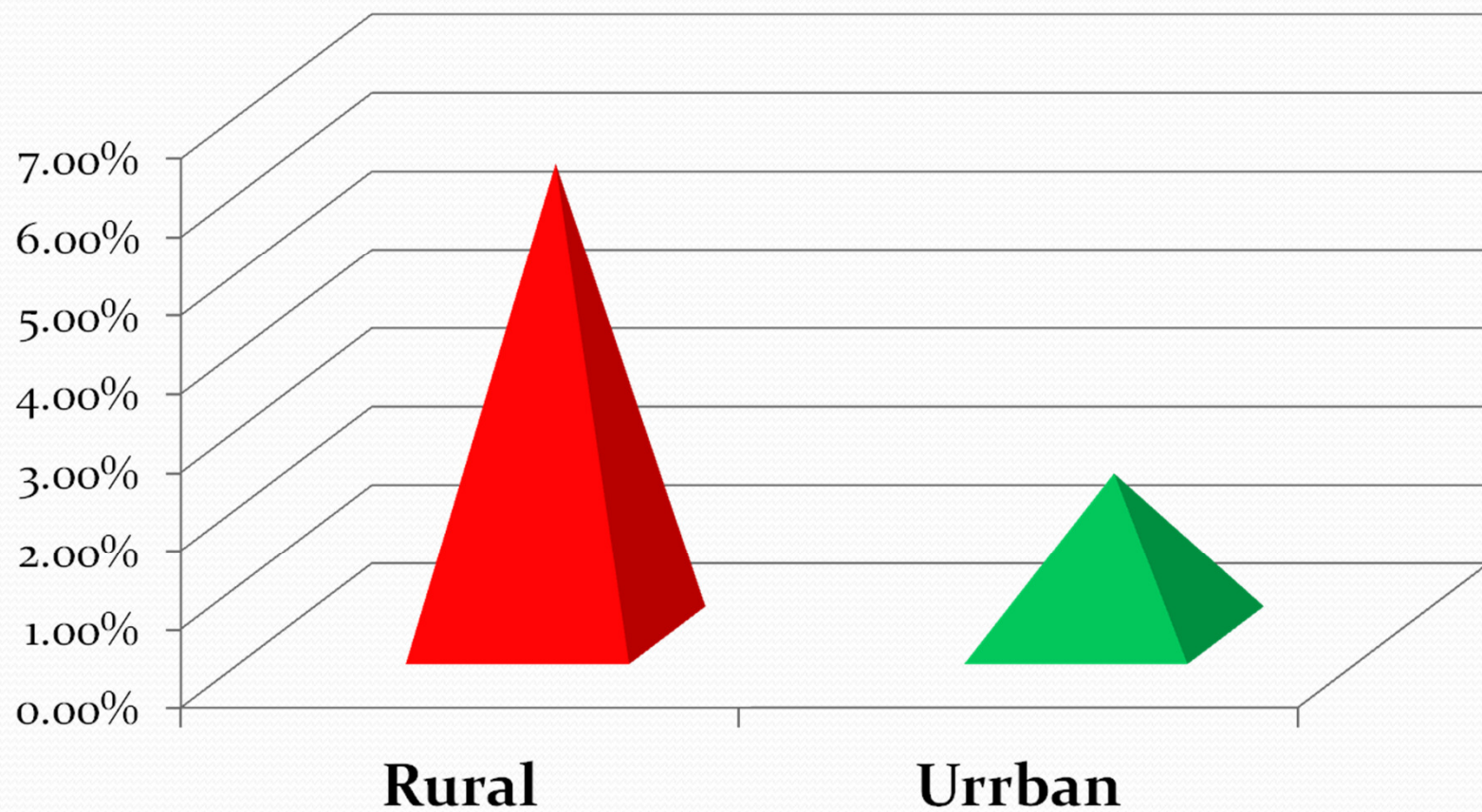
Table I Distribution of the study population (n=1645)

	RURAL			URBAN			TOTAL		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
CSOM	18	23	41	9	11	20	27	34	61
NO CSOM	283	357	640	484	460	944	767	817	1584
Total	301	380	681	493	471	964	794	851	1645

Table II. Distribution of CSOM among rural and urban children (n=1645)

Children	Rural	%	Urban	%	Total	%
CSOM	41	6.02%	20	2.07%	61	3.71%
NO CSOM	640	93.98%	944	97.93%	1584	96.29%
Total	681	100	964	100	1645	100

Prevalence of CSOM



**Table III CSOM and Guardian's occupation
(n=1645)**

Occupation	Rural CSOM	%	Urban CSOM	%	Total CSOM	%	P value
Manual labourer	37	60.66	5	8.20	42	68.85	<0.001
Service, Business & others	4	6.56	15	24.59	19	31.15	
Total	41	67.21	20	32.79	61	100.00	

Table IV CSOM and Guardian's Annual Income (n=1645)

Income of Guardian's	Rural CSOM	%	Urban CSOM	%	Total CSOM	%	P Value
Up to Taka 60,000	33	54.10	6	09.84	39	63.93	<0.001
>Taka 60,000	8	13.11	14	22.95	22	36.07	
Total	41	67.21	20	32.79	61	100.00	

CSOM and Total Family Members



Table IV CSOM and Total Family Members (n=1645)

Total Family members	Rural CSOM	%	Urban CSOM	%	Total CSOM	%	P Value
Small (up to 6)	5	8.20	15	24.60	20	32.79	<0.001
Large (>6)	36	59.02	5	8.20	41	67.21	
Total	41	67.22	20	32.80	61	100	

CSOM and Housing



Table V CSOM and Housing (n=61)

Housing	Rural		Urban		Total		P Value
	CSOM	%	CSOM	%	CSOM	%	
Kachha	30	49.18	5	8.20	35	57.38	<0.001
Semi-paka	9	14.75	7	11.48	16	26.23	
Paka	2	3.28	8	13.11	10	16.39	
Total	41	67.21	20	32.79	61	100	

CSOM and Maternal Education (n-61)

Maternal Education	Rural CSOM	%	Urban CSOM	%	Total CSOM	%	P Value
Illiterate	24	39.34	5	8.20	29	47.54	0.027
Primary	12	19.67	8	13.11	20	32.79	
Secondary & above	5	8.20	7	11.48	12	19.67	
Total	41	67.21	20	32.79	61	100.00	

CSOM and Sanitation



CSOM and Sanitation(n-61)

Sanitation	Rural		Urban		Total		P Value
	CSOM	%	CSOM	%	CSOM	%	
Safe	32	52.46	15	24.59	47	77.05	1.000
Unsafe	9	14.75	5	8.19	14	22.95	
Total	41	67.21	20	32.78	61	100.00	

CSOM and Bathing Habit(n-61)

Bathing Habit	Rural CSOM	%	Urban CSOM	%	Total CSO M	%	P Value
River/pond/canal	36	59.01	5	8.20	41	67.21	<0.001
Tube well/supply water	5	8.20	15	24.59	20	32.79	
Total	41	67.21	20	32.79	61	100.00	

Discussion

- The higher prevalence of CSOM among rural school children compared with urban primary school children is consistent with other recent studies both in Bangladesh and abroad.
- Though **Male sex** was reported to be one of the risk factors for CSOM but the relatively higher prevalence rate of CSOM in this survey among girls can be explained by social and familial attitudes to them in our community.

Discussion

- There were significant association of **Parent/guardian's occupation, Yearly income, Housing, Total family members, Maternal Education and Bathing habit** with the children having CSOM of the rural and urban community.
- Though, **sanitation** is an important risk factor of CSOM but there was no significant association of sanitation with the children having CSOM of the rural and urban community.

Conclusion

- Improvement of the socio-demographic status and living condition would reduce the prevalence of CSOM in primary school children in Bangladesh.
- Primary ear care education to students, teachers can prevent vulnerable children from developing hearing impairment and its resultant complications.
- Thus, our future citizens would be safeguarded from the preventable burning problem of CSOM.

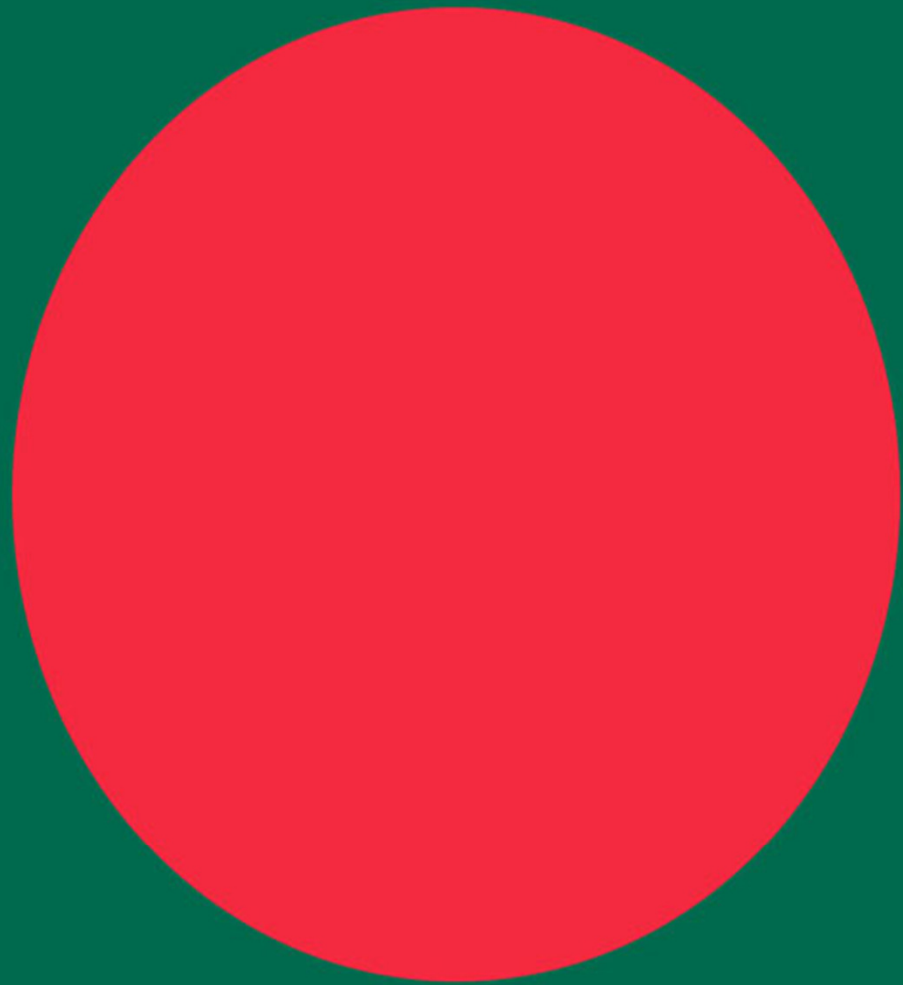
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Questions?





*Thank
You!*

