

Original research article

Comparison Of Health Seeking Behaviour For Ear Morbidities Among Children And Their Caregivers Among Rural And Urban Population Of Delhi**Dr. Kalika Gupta¹, Dr. R. K Gaur², Dr. Navin Kumar³****¹Assistant Professor, Community Medicine, Ananta Institute of Medical Sciences, Rajsamand, Rajasthan.****²Associate Professor and Head, Department of Community Medicine, Ananta Institute of Medical Sciences, Rajsamand, Rajasthan.****³Assistant Professor, Department of Community Medicine, Narayan Medical college and hospital, Sasaram, Bihar****Corresponding Author: Dr. Navin Kumar****Abstract**

Background: A person interacts with his or her surrounding environment through sensory experiences. The sense of hearing, in particular, fundamentally facilitates communication and nourishes social interaction. As per World health Organization report 2007, 6% of the population of India suffers with significant otological morbidities. It is estimated that over 166 million people in the developing world face a severe lack of intervention services for hearing loss. ENT problems in the community are often found to be managed without consulting a medical practitioner. A variety of factors such as the sex of the child, the socio-economic status, the severity of illness often determine the care seeking pattern within our country.

Method: Study was conducted at the urbanized village Barwala and a resettlement colony, named, Gokulpuri. 368 homes in the rural area and 367 homes in the urban area were visited and the parents were questioned about health seeking behavior regarding common ear morbidities. Selection of the houses was based on simple random sampling. Results: It was found that 82.9% of caregivers practiced ear cleaning for their kids (78.8% in rural and 86.9% in urban). Various malpractices like visiting quacks for earache, putting oil inside ear canal, etc were highly prevalent in the study area.

Conclusion: Ear cleaning practices that are prevalent among underdeveloped areas of India are highly unhygienic. Actions need to be taken to improve the knowledge, attitude and practices of the people, regarding ear care.

Keywords: ear pain, children, ear care, hygiene, matchstick, oil

Introduction

A person interacts with his or her surrounding environment through sensory experiences. The sense of hearing, in particular, fundamentally facilitates communication and nourishes social interaction. Hearing is the key to learning spoken language and is important for the cognitive development of the children. Hearing loss is a barrier to both, education and social integration.¹⁻⁶

Burden of disease

Globally, more than 360 million population (nearly 5% of world's population) have disabling hearing loss and 32 million of them are children. Approximately 0.5-5 of every 1000 infants is born with or develops in early childhood disabling hearing loss. It is estimated that over 60% of the otological (ear) morbidities could be avoided through preventive measures, as stated by World Health Organization (2015).⁷⁻⁸ An estimated two-third of the world's hearing impaired population are believed to be distributed among developing countries.⁹The

prevalence of otological morbidities is greatest in South Asia, Asia Pacific and Sub-Saharan Africa. Prevalence of otological morbidity in South Asia in pediatric age group is 2.4%.⁷⁻⁸

As per World health Organization report 2007, 6% of the population of India suffers with significant otological morbidities.⁹ Based on this, it is estimated that over 70 million persons in India are living with hearing loss equal to or greater than moderate degree. In practical terms, this implies that these people (with disabling hearing loss) would have difficulty in carrying out day to day activities such as routine conversation, listening to radio and television etc. Persons with higher degrees of hearing loss (severe or profound), may be able to only hear words shouted into the ears or not be able to hear at all.¹⁰

According to Census of India, 2011, of all the people with hearing disability in India, around 8% belong to age group 5-9 years. Out of these, 70% belong to rural India and the rest are in urban India.¹¹

Children in the school-going age group (6-16 years) represent 25% of the population in the developing countries.¹² In India, this figure (children in school going age group) is around 20%.¹² School age is one of the most appropriate time for screening various morbidities in children since the majority of children gather in academic centers and they all can be examined.¹³

Hearing loss may be bilateral (both ears) or unilateral (one ear). It may be fluctuating, permanent, or temporary. When all degrees (mild, moderate, severe, profound) and types (bilateral, unilateral, fluctuating) are included hearing loss ranges from 5 to 21% in children between 4 and 11 years as stated by Berg AL et al¹⁴ in their study in Bangladesh.

Impact of unaddressed otological morbidities in children:

Communication development and behavioral skills are influenced by a child's ability to hear. Hearing loss can also affect a child's social interactions, emotional development, and academic performance. Children can exhibit varying degrees of difficulty in hearing and understanding environmental and speech sounds; significant problems listening and understanding in noisy and reverberant environments. Children typically exhibit delays and/or difficulty with tasks involving language concepts; auditory attention and memory, and comprehension; receptive and expressive language; syntax, semantics, and vocabulary development; speech perception and production, lower scores on achievement and verbal IQ tests; greater need for enrollment in special education or support classes; increased need for organization support in the classroom.¹⁵

Children may have self-described feelings of isolation, exclusion, embarrassment, annoyance, confusion, and helplessness; refuse to participate in group activities; act withdrawn or sullen; exhibit lower performance on measures of social maturity; have significant problems following directions.¹⁵

Parents of children who are deaf or hard of hearing must deal with specific challenges, are often at greater risk of stress, have higher out-of-pocket expenses and lose more work days than other parents. The stress can be further exacerbated by communication difficulties with their children and increased need for support and financial resources.¹⁶

It is estimated that over 166 million people in the developing world face a severe lack of intervention services for hearing loss.¹⁷ ENT problems in the community are often found to be managed without consulting a medical practitioner. A variety of factors such as the sex of the child, the socio-economic status, the severity of illness often determine the care seeking pattern within our country.¹⁸ In 2012, Shaheen M et al¹⁹ concluded in their study that 43.2% had no ear cleaning habit, 36.6% had cleaning habit with feather or wood and vegetable sticks. According to Aggarwal A K et al¹⁸, (2013) 65.6% used ear buds to clean ear and 15 % people used hot / cold mustard oil alone or in combination with ear drops, garlic etc. 7.2%

uses hydrogen peroxide hot water and cotton. 4.4% uses ear drops for ear cleaning purpose and remaining people preferred to go to doctor for ear cleaning.

There is a need to find out the various ear cleaning and health seeking practices regarding ear morbidities among rural and urban population. Findings of this study would help in designing appropriate strategies and health education material to control preventable hearing loss among children.

Methodology:

It was a cross-sectional, community based study. Study was conducted at the urbanized village Barwala and a resettlement colony, named, Gokulpuri.

At 95% confidence level and taking the prevalence¹⁸ of otological morbidities among Delhi children to be 21.5% and with a relative error of 20%, the sample size came out to be 365. Hence, 368 homes in the rural area and 367 homes in the urban area were visited and the parents were questioned about health seeking behavior regarding common ear morbidities. Selection of the houses was based on simple random sampling. Subjects were provided with information about the study and informed verbal consent was taken. Study was carried out using preformed, pretested questionnaire which had extensive questions on what the subjects will do first if their children present with common ear problems. Hence, health seeking behavior of caretakers regarding ear morbidities in their children was assessed. The collected data was coded, compiled and entered in the Microsoft-Excel and then analyzed and statistically evaluated by using SPSS-PC-17 version.

Results:

The subjects were mostly mothers [52%] or grandparents [41%]. The mothers belonged to the age group 19-40 years and grandparents were in the age group 45-87 years. Mean age of informers in rural area was 28 years (Standard Deviation, SD 5.7) and in urban area mean age was 34.1 years (SD 6.6).

Health seeking behavior

a) Ear cleaning practice

Table 1: Ear cleaning practice by caregivers.

	Rural N (%)	Urban N (%)	Total N (%)	Chi square, df, p value
Regular ear cleaning practice present	290 (78.8)	319 (86.9)	609 (82.9)	8.52, 1, 0.004
No regular ear cleaning practice	78 (21.2)	48 (13.1)	126 (17.1)	
Total	368 (100)	367 (100)	735 (100)	

On analysis, it was found that 82.9% of caregivers practiced ear cleaning for their kids (78.8% in rural and 86.9% in urban). Around 17.1% of the total caregiver didn't do ear cleaning for their children. [Table no. 1, Figure 1]

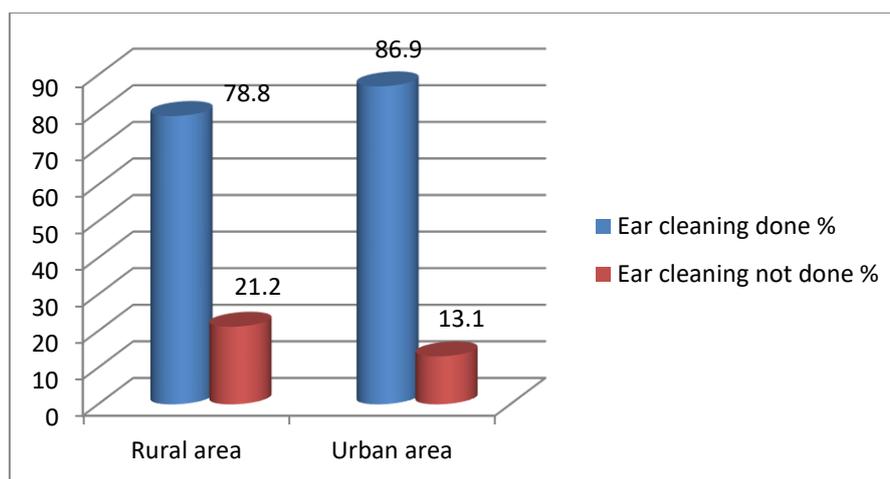


Figure 1: Ear cleaning practice in rural and urban areas

b) Various methods used to clean ears:

From table 2, we can make out that most of the caregiver used ear bud (47.2) for cleaning their child's ears. Second most common practice among caregivers was to use home remedies (21.4%) like mustard oil, or mixture of oil with onion or garlic paste, etc. Towel/hanky was used by 12.4%, matchstick/pencil by 9.1%, doctor by 4.1%, local ear cleaner by 3.1% and hydrogen peroxide (H₂O₂) by 4.1% of caregivers.

Table 2: Methods used to clean ears

S.no		Rural N (%)	Urban N (%)	Total N (%)
1	Oil /Home remedies	97 (26.4)	60 (16.3)	157 (21.4)
2	Matchstick/pencil	41 (11.1)	26 (7.1)	67 (9.1)
3	Ear bud	160 (43.8)	187 (50.9)	347 (47.2)
4	Towel/Hanky	34 (9.2)	57 (15.5)	91 (12.4)
5	Hydrogen peroxide, H₂O₂	7 (1.9)	13 (3.5)	20 (2.7)
6	Doctor/ear drops	12 (3.3)	18 (4.9)	30 (4.1)
7	Local ear cleaner	17 (4.6)	6 (1.6)	23 (3.1)
	Total	368	367	735

c) Health care provider approached for any ear related complaint:

We can conclude from table 3 that major percentage of caregivers (24.4%) rely on quacks for minor ear related complaints. Percentage of caregivers who approached private practitioner, AYUSH practitioner or government health center were 21%, 11% and 31% respectively. Around 6.5% care givers relied on pharmacists for immediate relief and 2.6% on Dais. 3% of the respondents couldn't answer the question.

Table 3: Health care provider approached for any ear related complaint

S.no	Health care provider	Rural N (%)	Urban N (%)	Total N (%)
1	Private practitioner	70 (19)	86 (23.4)	156 (21.2)
2	Ayurveda/Homeopathy	36 (9.8)	46 (12.5)	82 (11.2)
3	Quacks	112 (30.4)	67 (18.3)	179 (24.4)
4	Health center	97 (26.4)	130 (35.4)	227 (30.9)
5	Dai	14 (3.8)	5 (1.4)	19 (2.6)
6	Pharmacist	23 (6)	27 (7.1)	50 (6.5)
7	Don't know	16 (4.3)	6 (1.6)	22 (3)
	Total	368	367	735

d) Immediate action taken when foreign body got impacted in child's ear

We tried to find out what was the immediate action of the caregiver among those children who gave history of foreign body impaction in the ear. Maximum number of respondents (7) consulted doctor, 2 respondents consulted the locally available quacks, 2 tried to remove the foreign body on their own and 1 had put oil into the child's ear thinking that the foreign body would come out on its own. [Table 4]

Table 4: Immediate action taken when foreign body got impacted in child's ear

Immediate action	Rural N	Urban N	Total N	Fischer exact p value
Tried removing FB by themselves	1	1	2	0.83
Visited doctor immediately	5	2	7	
Visited quacks	1	1	2	
Pour oil in ear	1	0	1	
Total	8	4		

e) Actions taken by Caregivers for ear pain:

Table no. 5 depicts the common actions taken by caregiver if the child complained of ear pain. We can conclude that equal number of caregivers approached doctor and quacks, 25% each. Next most common practice was to instill hot oil mixed with garlic (20%) or simple hot oil (15%) into the child's ear. 6.2% of caregivers preferred taking medicines from nearby pharmacist and 3.1% preferred taking medicines on their own. 3.1% of the didn't respond to the question.

Table 5: Actions taken by caregivers for ear pain

S.No.	Actions	Rural N (%)	Urban N (%)	Total N (%)
1	Visited quack	101 (27.4)	89 (24.2)	190 (25.8)
2	Visited doctor	73 (19.8)	112 (30.5)	185 (25.1)
3	Put hot oil mixed with garlic	79 (21.4)	68 (18.5)	147 (20)
4	Put hot oil	58 (15.7)	57 (15.4)	115 (15)
5	Take medicine from pharmacist	31 (8.4)	15 (4.1)	46 (6.2)
6	Take medicine for pain	17 (4.6)	11 (2.9)	28 (3.8)
7	Don't know	9 (2.4)	14 (4)	23 (3.1)
	Total	368	367	5

f) Actions that can be harmful for ears as enumerated by caregivers :

In the present study, around 92% of caregivers reported inserting stick into ears as harmful. Next most common harmful thing enumerated was loud music (77%), then inserting stick/pencil into ears (67%), shouting into ears (64.8%), noise from crackers 49%. Pond water was indicated as harmful by 46.9% and clean tap water by 12.5%. home remedies like instilling oil into ears was stated as harmful by 28%, slapping by 14.8% and use of ear bud as harmful act for ears was reported by 3.6% of people. [Table 6]

Table 6: Actions that can be harmful for ears as enumerated by caretakers*:

S.No	Actions	Rural N (%)	Urban N (%)	Total N (%)
1	Inserting stick into ears	281 (76.3)	295 (80.3)	676 (91.9)
2	Loud music	272 (73.9)	301 (82)	573 (77.9)
3	Inserting pencil into ear	213 (57.8)	280 (76.2)	493 (67)
4	Shouting into ears	225 (61.1)	252 (68.6)	477 (64.8)
5	Noise from crackers	181 (49.1)	184 (50.1)	365 (49.6)
6	Pond water	168 (45.6)	177 (48.2)	345 (46.9)
7	Clean tap water	42 (11.4)	50 (13.6)	92 (12.5)
8	Putting oil into ears	85 (23.1)	120 (32.6)	205 (27.8)
9	Slapping	37 (10)	72 (19.6)	109 (14.8)
10	Ear bud use	11 (2.9)	16 (4.3)	27 (3.6)

- Respondent could choose more than one option as the answer.

Discussion:

In the current study, it was found that 82.9% of caregivers practiced ear cleaning for their kids (78.8% in rural and 86.9% in urban). Shaheen M M et al¹⁹ concluded in their study among 4-12 years old children that 56.8% had ear cleaning habit. This lower prevalence was found since study¹⁹ was conducted in rural low socio-economic parts of Bangladesh. Srikanth S et al⁷¹ said 99.7% parents tended to clean the ears of their children in rural South Indian community. This higher prevalence is due to higher literacy rate in South India.¹¹

From the present study, it was concluded that most of the caregiver used ear bud (47.2) for cleaning their child's ears. Second most common practice was to use home remedies (21.4%) like mustard oil, or mixture of oil with onion or garlic paste, etc. Towel/hanky was used by 12.4%, matchstick/pencil by 9.1%, doctor by 4.1%, local ear cleaner by 3.1% and hydrogen peroxide (H₂O₂) by 4.1% of caregivers. Srikanth S et al²⁰ stated that 66.6% patients of ear morbidity, in South India, used ear bud and 67% used home remedies for minor complaints. This percentage is higher as compared to present study. The reason is as stated by author is, since literacy rate is higher in South India, people there have their own perceptions about preventive measures for minor ailments and don't feel the need to consult a qualified practitioner. Also, Shaheen M M et al¹⁹ said that 36.6% caregivers in Bangladesh used feather or wood and vegetable sticks, coconut oil (33.1%), plant extracts (15.4%) and salt water (10%). Biswas et al²¹ did study among 4-13 years old rural school children of Bangladesh and reported that more than 90% of people used unhygienic means to clean ear and just 5.7% used cotton bud. The lower percentage of use of sticks and oils for cleaning ears in present study as compared to studies done in Bangladesh can be explained by the higher literacy rate in India as compared to Bangladesh.²²

b) Health care provider approached for ear related complaints:

In the present study, we found major percentage of families (24.4%) relies on quacks for minor ear related complaints. Percentage of families who approached private practitioner, AYUSH practitioner or government health center were 21%, 11% and 31% respectively. Around 6.5% care givers relied on pharmacists for immediate relief and 2.6% on Dais. In the study (2014) by Benova et al²³, among individuals reporting hearing difficulties, 46.1% had mentioned the issue first to a health professional. In 2013, Aggarwal A K et al¹⁸ reported that 89% seek consultation and rest 11% refused to take treatment from healthcare personnel for the ear/hearing problem. Treatment seeking pattern showed that 45.5 % parents consulted ENT doctors for the ear problems followed by 28% who consulted GP and 18% who took their children to health centre. Only a few parents seek treatment from Ayurveda,

Homeopaths, Quack, Dai etc. Biswas et al²¹ stated (2005) that 89% of people seek treatment for ear complaints and among them 25% sought guidance from a primary level physician (MBBS doctor) or allopathic hospital and 7.14%, 35.71%, 10.71%, 10.71% received it from 'kabiraj', quacks, homeopathic doctors, and pharmacy salespersons respectively. These findings are in line with present study.

Shaheen M M et al¹⁹ stated (2012) that around 90% people seek primary medical care from quacks or pharmacists. Sreerama R et al²⁴ in 2005 indicated that pharmacies were the most common facility where care was sought in cases of childhood illnesses. The reason for vast differences in findings is variety of socio-cultural beliefs people have in different communities and their socio-economic status also determine the first health care provider approached.

In a study by Hansen M P et al²⁵, in a town of Australia, 86.6% of mothers had approached qualified doctor for most recent OM episode in their child. This high percentage is due to higher socio-economic status and literacy state in Australia as compared to the settings of the present study.

c) Health facility sought for earache:

In the present study, in case of ear pain, equal number of caregivers approached doctor and quacks, 25% each. Next most common action was to instill hot oil mixed with garlic (20%) or plain hot oil (15%) into the child's ear. 6.2% of caregivers preferred taking medicines for earache from nearby pharmacist and 3.1% preferred taking medicines on their own. Srikanth S et al²⁰ said (2009) that ear discharge was more likely to be treated more seriously than earache as up to 50% of caregivers took the child to a hospital for this symptom compared to 6.4% for earache. In case of ear pain, only 3.9% consulted qualified doctor, as quoted by Guest et al²⁶ in 2004. In 2003, Jimba M et al²⁷ indicated that 31% used home remedies for ear pain. Of those who sought healthcare, 81% first visited traditional healers, 26% of whom visited the traditional healers exclusively, while 55% first visited the health post or sub-health post after consulting with the traditional healer. The remaining 20% first visited either health post or female community health volunteers. In the analysis by Pillai R K et al²⁸ it was revealed that 17% did not seek medical care for ear ache. 88% received allopathic medical care, and 12% received alternative medical care.

d) Knowledge about actions that can be harmful for ears:

In the present study, around 92% of caregivers reported inserting stick into ears as harmful. Next most common harmful thing enumerated was loud music (77%), then inserting stick/pencil into ears (67%), shouting into ears (64.8%), and noise from crackers 49%. Pond water was indicated as harmful by 46.9% and clean tap water by 12.5%. Home remedies like instilling oil into ears was stated as harmful by 28%, slapping by 14.8% and use of ear bud as harmful act for ears was reported by 3.6% of people. Srikanth S et al²⁰ indicated that over 50% of the population showed knowledge deficits with regard to the various risk factors for otitis media. The findings of the present study are almost similar to the findings by Aggarwal A K et al¹⁸ who stated that 63.4% parents thought inserting stick into ear is most harmful followed by 62.2% parents who thought that loud music though I-pod, walkman is most dangerous. 60.2% parents thought putting objects like pencil causes damage to the ear. Parents were also aware of reasons like shouting in the ear, exposure to firecrackers, dirty pond water etc as causes of damage to the ear.

Conclusion:

It can be concluded that the ear cleaning practices that are prevalent among the rural areas in India are more towards the unhygienic side than in the urban area, though urban area is not very ahead of rural area. Malpractices like putting hot oil in aching ear, inserting stick to clean ear wax, referring to quacks for foreign body impaction, etc need to be addressed.

Strategized actions directed towards improving knowledge, attitude and practices of the people for ear care need to be taken.

References:

1. Yoshinaga-Itano C, Seday AL, Coulter DK, Mehl AL. Language of early- and later-identified children with hearing loss. *Pediatrics*. 1998; **102**(5): 1161-71.
2. Tellevik JM. Language and problem solving ability: a comparison between deaf and hearing adolescents. *Scandinavian Journal of Psychology*. 1981; **22**(2): 97-100.
3. Northern JL, Downs MP. *Hearing in children*. 5th ed. Philadelphia, PA, London: Lippincott, Williams & Wilkins; 2001.
4. Olusanya BO, Neumann KJ, Saunders JE. The global burden of disabling hearing impairment: a call to action. *Bulletin of the World Health Organization*. 2014; **92**(5): 367-73.
5. Karchmer MA, Allen TE. The functional assessment of deaf and hard of hearing students. *Am Ann Deaf*. 1999; **144**(2): 68-77.
6. Theunissen SC, Rieffe C, Netten AP, Briaire JJ, Soede W, Schoones JW, et al. Psychopathology and its risk and protective factors in hearing-impaired children and adolescents: a systematic review. *JAMA Pediatrics*. 2014; **168**(2): 170-177.
7. Deafness and hearing loss factsheet. Geneva: World Health Organization; 2015. (accessed 21 December 2015). Available at: <http://www.who.int/mediacentre/factsheets/fs300/en/>
8. Prevention of Blindness and Deafness. Global Estimates on prevalence of Hearing Loss. Geneva: World Health Organization 2013. (Accessed 30 September 2015). Available at: <http://www.who.int/pbd/deafness/estimates/en/index.html>
9. Situation Review and Update on Deafness, Hearing Loss and Intervention Programmes-Proposed Plans of Action for Prevention and Alleviation of Hearing impairment in Countries of the South- East Asia Region. World Health Organization Region office for South East Asia 2007.
10. WHO primary ear and hearing care training resources, intermediate level. Geneva: World Health Organization 2006. (accessed 6 September 2015). Available at: http://www.who.int/pbd/deafness/activities/hearing_care/trainer.pdf
11. Population enumeration data. Census of India, 2011. Ministry of Home Affairs. Government of India. [Internet]. Available from: http://www.censusindia.gov.in/2011census/population_enumeration.aspx.
12. World Health Organization: Report of WHO/IAPB scientific meeting, Hyderabad, India 13–17, April 1999. Childhood Blindness Prevention. WHO/PBL/87
13. Absalan A, Pirasteh I, Khavidaki G, Asemi A, Esfahani A, Nilforoush M. A prevalence study of hearing loss among Primary school children in the South East of Iran. *Hindawi Publishing Corporation International Journal of Otolaryngology* Volume 2013, Article ID 138935, 4 pages <http://dx.doi.org/10.1155/2013/138935>
14. Berg AL, Papri H, Ferdous S, Khan NZ, Durkin MS (2006) Screening methods for childhood hearing impairment in rural Bangladesh. *Int J Pediatr Otorhinolaryngol* 70:107–114
15. Identifying and managing hearing loss in school age children [Internet]. ASHA. (Accessed 2014 Aug 8). Available from: asha.org/default.aspx?q=hearing_loss_in_school_age_children.
16. Barton GR, Stacey PC, Fortnum HM, Summerfield AQ. Hearing-impaired children in the United Kingdom, IV: cost-effectiveness of pediatric cochlear implantation. *Ear Hear*. 2006; **27**(5): 575-8

17. *Smith A, Garms C: Alliance faces worldwide realities of Hearing loss Hearing Health 2004, 20:2*
18. Aggarwal AK, Chadha S, Garg S. Profile of hearing morbidity and identification of barriers and challenges for access to ear and hearing care services in children of urban and rural areas of Delhi. [Internet].ICMR. (Accessed 2014 Sep 30). Available from: http://scholar.google.co.in/scholar?start=10&q=prevalence+aural+morbidities+in+india+children&hl=en&as_sdt=0,5
19. Shaheen M M, Raquib A, Ahmad S M. Chronic suppurative otitis media and its association with socio-economic factors among rural primary school children of Bangladesh. *Indian J otolaryngol head neck surg.* (January–March 2012) 64(1):36–41; DOI 10.1007/s12070-011-0150-9.
20. Srikanth S, Isaac R, Rebekah G, Rupa V. Knowledge, attitudes and practices with respect to risk factors for otitis media in a rural South Indian community. *Int J PediatrOtorhinolaryngol.* 2009 Oct;73(10):1394-8. doi: 10.1016/j.ijporl.2009.06.024.
21. Biswas AC, Joarder AH, Siddiquee BH. Prevalence of CSOM among rural school going children. *Mymensingh Med J* 2005;14(2):152-5.
22. Find the data. Country facts. World Economic outlook. 2016. [Internet]. Available at: <http://country-facts.findthedata.com/compare/122-136/India-vs-Bangladesh>
23. Benova L, Grundy E, Ploubidis G B. Socio-economic position and health seeking behavior for hearing loss among older adults in India. *Journals of gerontology.* 2014;70(3):443-52. doi:10.1093/geronb/gbu024.
24. Sreeramareddy CT, Shankar RP, Sreekumaran BV, Subba SH, Ramachandran H: Care seeking behaviour for childhood illness-a questionnaire based survey in Western Nepal. *BMC International Health & Human rights* 2006, 6:7
25. Hansen M P, Howlett J, Chris D M, Hoffmann T C. Parent's beliefs and knowledge about the management of acute otitis media: a qualitative study. *Hansen et al. BMC Family Practice* (2015) 16:82. DOI 10.1186/s12875-015-0297-7
26. Guest JF, Greener MJ, Robinson AC, Smith AF. Impacted cerumen: composition, production, epidemiology and management. *QJM* 2004 ; 97(8):477-88.
27. Jimba M, Poudyal AK, Wakai S. The Need For Linking Healthcare-Seeking Behavior And Health Policy In Rural Nepal. *Southeast Asian J Trop Med Public Health* 2003;34(2):462-3.
28. Pillai RK, Williams SV, Glick HA, Polsky D, Berlin JA, Lowe RA: Factors affecting decisions to seek treatment for sick children in Kerala, India, *SocSci Med.* 2003;57(5):783-90.