

# Is there a digital divide among school students? an exploratory study from Puducherry

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## ABSTRACT

**Background:** The advent of internet has triggered a growth in provision of more interactive health promotion messages, which are likely to enhance the potential for behavior change especially among children. We intended to find out the determinants and prevalence of use of internet among school students of Puducherry. **Materials and Methods:** An exploratory study was carried out among all the students belonging to the standards VI to IX ( $n = 421$ ) in three schools from urban areas and two schools from rural areas of Puducherry. A pretested, self-administered questionnaire which sought information on sociodemographic details (age, gender, standard of education, occupation of father, and type of school), use of internet, and place of accessing internet, hours of use, and reasons for use was utilized. The statistical significance between the categorical variables was done using chi-square test. All significance tests were two-tailed and statistical significance was defined as a value of  $P < 0.05$ . **Results:** Majority (72.2%) were boys. Less than one-third (23.8%) of the students used internet. The use of internet was found to be significantly higher in mid-adolescents (Adjusted OR: 2.205); among boys (Adjusted OR: 3.835) and students from urban areas (Adjusted OR: 4.694). **Conclusion:** There is a geographical and gender divide observed among the school children in the use of internet. Taking the steps to bridging the digital divide will help utilize internet as a media for health promotion.

**Key words:** Digital divide, health promotion, school children

## INTRODUCTION

Technological advancement has brought various forms of information and communication technology (ICT) within the reach of children. In the United States, over 80% of adolescents own at least one form of new media technology (e.g., cell phone, personal data assistant, and computer for

internet access).<sup>[1]</sup> Data from India regarding the use of ICT among children and adolescents are limited.<sup>[2]</sup> The use and access to ICT is not uniform and there is a vast difference among various sociodemographic groups, known as digital divide.

Digital divide has been defined in various ways. Digital divide, or the digital split, is a social issue referring to the differing amount of information between those who have access to the internet (especially broadband access) and those who do not have access.<sup>[3]</sup> The Organization for Economic Cooperation and Development defines digital divide as “the gap between individuals, households, businesses, and geographic areas at different socioeconomic levels with regard to both their opportunities to access ICTs and to their use of the internet for a wide variety of activities.”<sup>[4]</sup>

The potential of using internet as a health promotion tool cannot be ignored. Unlike the paper-based health promotion materials of the past, the internet has triggered a growth in

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Access this article online	
Quick Response Code:	Website: www.jehp.net
	DOI: 10.4103/2277-9531.131894

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This article may be cited as: Ramalingam A, Kar SS. Is there a digital divide among school students? an exploratory study from Puducherry. J Edu Health Promot 2014;3:30.

provision of more interactive health promotion messages, which are likely to enhance the potential for behavior change.<sup>[5]</sup>

Various channels of communication are used to promote health among children and ICT can serve as an innovative way of delivering the desired health education to bring about behavioral change. Information regarding the use of internet is essential to explore the feasibility of use of this mode in information dissemination. Puducherry is one the better performing union territories in India with a robust public health system, presence of motivated human resources for health, and a high literacy rate provides opportunity to test innovations in health. Hence, an exploratory study was conducted to find out the determinants and prevalence of use of internet among school students of Puducherry.

## MATERIALS AND METHODS

### Study setting

An exploratory study was carried out in three schools from urban areas and two schools from rural areas of Puducherry between September 2011 and November 2011. These schools were selected purposively, as they cater to the children from the service areas of the urban and rural health centers (JIUHC and JIRHC) of Jawaharlal Institute of Post graduate Medical Education and Research, Puducherry, which provides health services in these areas. Prior permission and informed consent was taken from the principals of the respective schools before starting the study.

### Study population

Being an exploratory study, all the students belonging to the standards VI to IX ( $n = 421$ ) were included in the study. The students of standards X to XII were not included as the school principals refused to give consent, because of the tight teaching schedule that was in practice for them. The students from younger standards were excluded, because the tool to be used was a self-administered one and the teachers expressed doubts regarding the ability of students to answer it.

### Study tool and data collection

A structured self-administered questionnaire was developed and pretested due to unavailability of a standard instrument. This sought information on sociodemographic details (age, gender, standard of education, occupation of father, and type of school), use of internet, and place of accessing internet, hours of use, and reasons for use.

After consulting with the school authorities, a suitable date was fixed for data collection. The students were made to assemble in a class room and were briefed about the questionnaire. They were reassured that anonymity will be maintained. The name of the student or the school was not included in the questionnaire for the same purpose. The questionnaire was available in both Tamil and English. Adequate time was given for the students to complete the questionnaire.

### Data analysis

Data were analyzed using SPSS version 16 (Statistical software for social sciences). Univariate analysis for determining the association between use of internet and various factors like age categories, gender, area of residence, type of school attended, and occupation of the father was done using chi-square test. Logistic regression analysis was done to estimate the odds ratio and 95% confidence intervals (CIs) for identifying independent determinants of internet use. All tests were two-tailed and statistical significance was defined as a value of  $P < 0.05$ .

## RESULTS

Among the 421 students included in the study, nearly three-fourth (72.2%) were boys and almost half (52.2%) were from rural area. Majority (72.2%) of the students were from government schools. Most (57.5%) of the fathers of these children were employed as unskilled laborers.

Internet was being used by 100 (23.8%) students and most (63%) of them had accessed it from internet cafes. More than half of them (62%) had used the internet for playing games and other forms of entertainment. The mean (standard deviation) hours of internet use per day was 0.9 (0.7) hours.

The use of internet was found to be significantly higher ( $P < 0.05$ ) among boys (30.9%), students from urban areas (39%) and from government schools (26.3%). The proportion of early adolescents using internet was more compared with late adolescents; however, this was not statistically significant ( $P = 0.059$ ) [Table 1].

After logistic regression analysis, the use of internet was found to be significantly higher in mid- adolescents (AOR: 2.205; 95% CI [1.284-3.785]), among boys (AOR: 3.835; 95% CI [1.533-9.594]) and students from urban areas (AOR: 4.694; 95% CI [2.612-8.436]) [Table 2].

## DISCUSSION

Internet penetration is found in nearly 24% of the students in the study population; however, there is a wide disparity in internet use in terms of age group, gender, and geographic location in our study population.

Only 10% of the rural students use internet against almost 40% in urban areas. After adjusting for other factors using logistic regression, it is found that if a student is living in an urban area, he/she is 4 and 1/2 times more likely to use internet as compared with a rural counterpart. Sumanjeet Singh reports that the internet access in urban households of India is 10 times that of rural households in 2008. Inaccessibility is the main issue which drives this urban rural divide. Aspects like lack of connectivity, cost of owning a computer are some of the factors which augment the divide. In contrast in China, 69% of the rural students use internet against 88% of urban students.

**Table 1: Determinants of internet use among school children**

Determinants	Internet use		Chi-square	P value
	Yes (n=100)	No (n=321)		
Age categories				
Early adolescents (10-13)	61 (29.5)	228 (70.5)	3.562	0.059
Mid-adolescents (14-16)	39 (21.1)	93 (78.9)		
Gender				
Boys	94 (30.9)	210 (69.1)	31.034	0.001*
Girls	6 (5.1)	111 (94.9)		
Geographic location				
Urban	78 (39)	122 (61)	48.905	0.001*
Rural	22 (10)	199 (90)		
Class				
VI	12 (15.4)	66 (84.6)	5.242	0.155
VII	18 (21.1)	67 (78.8)		
VIII	39 (28.5)	98 (71.5)		
IX	31 (25.6)	90 (74.4)		
School type				
Government	80 (26.3)	224 (73.7)	3.967	0.046*
Private	20 (17.1)	97 (82.9)		
Occupation of father				
Unskilled	58 (24)	184 (76)	2.964	0.397
Semiskilled	33 (25)	99 (75)		
Associate professionals and professionals	2 (50)	2 (50)		
Unemployed	7 (16.3)	36 (83.7)		

\*: P value<0.05

**Table 2: Logistic regression predicting the use of internet in the study population**

Determinants	Odds ratio (EXP β)	95.0% CI for EXP (β)		P value
		Upper	Lower	
Age categories				
Early adolescents	Ref			
Mid-adolescents	2.205	1.284	3.785	0.004*
Gender				
Girls	Ref			
Boys	3.835	1.533	9.594	0.004*
Geographic location				
Rural	Ref			
Urban	4.694	2.612	8.436	0.001*
School type				
Private	Ref			
Government	1.324	0.735	2.384	0.394

CI: Confidence interval, EXP: Exponential, \*: P value<0.05

The internet use among boys is nearly 4 times (AOR: 3.8) more than girls. This gender divide in internet use is seen even in developed regions like the United States up to the late nineties; however, the gap was bridged in 2003.<sup>[6]</sup>

Gender divide in internet use in India among school children is not well-documented. The older children (mid-adolescents) are 2 times more likely to use internet when compared with the younger ones (early adolescents). This could be because, the younger students are not yet taught

computers in their syllabus and they are not allowed in internet cafes.

Health behaviors account for an estimated 60% of the risk associated with chronic illnesses such as diabetes, cardiovascular diseases, and some cancers.<sup>[7]</sup> Computer-tailored interventions have become an increasingly common strategy for altering health risk behaviors such as tobacco use, poor diet, and lack of exercise that are linked to chronic disease worldwide.<sup>[8]</sup> Adolescence is the stage in life where habits are formed and this group needs to be targeted as they can not only alter their own behavior but also channel the health promotion message to their respective families and communities.

## CONCLUSION

The internet use among the school children in both urban and rural areas is low. If at all we would like to use ICT for health promotion, then it would be more appropriate for urban children. Targeting boys through ICT will be more appropriate.

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**Source of Support:** Nil, **Conflict of Interest:** None declared