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Conceptualizing Hiv/Aids: Developmental Trend In School Children

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Abstract: *Background: Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome (HIV/AIDS) is a cluster of various health conditions caused to a person infected with HIV. Although the prevalence rate and its incidence has been increasing over time, the knowledge regarding it is seen to be poor. Not only this, the society also holds lot of stigma towards HIV/AIDS as a result of misconceptions. More often, children and adolescents are seen to have little knowledge that increases over time with maturity and education, inversely decreasing their misconceptions.*

Method: *The present study aimed to understand the conceptualization of HIV/AIDS among Indian school children, using a qualitative approach. The study also attempted to identify a progressive change in the concept of HIV/AIDS from class 6 to class 12 students across India. Students belonging to the age group of 11 years to 18 years falling in the classes of 6^{th} class to 12^{th} class were chosen to fill an open ended question. Data from 784 participants were collected and analysed.*

Results: *Content analysis was done and sub-themes that emerged out of the responses were categorized under themes like nature of the disease AIDS, its symptoms, its causes, misconceptions regarding AIDS, and finally "do not know "category. Further, using frequency of responses, entropy (disorderliness) rate was calculated which helped in seeing a developmental trend. The results showed a gradual increase in the neutralized entropy from class 6 to class 8 and then sudden jump from class 9 to class 11. The entropy rates give a picture of the varied responses that students have when their class level increases from 6^{th} to 11^{th}. Furthermore, the misconceptions are seen to decrease progressively across the classes.*

Keywords: *HIV/AIDS, developmental trend, knowledge, misconceptions, entropy*

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I. Introduction

The health of the nation should ideally be planned and effectively executed. It should have a focus to arrest and prevent the disease condition, protect for the next decade, and prepare the future population for a healthy lifestyle. This is an efficient way to encounter the impending prevalence projected for any disease conditions, lest the very purpose of the projections may be defeated. One of the fundamental initiatives in preparing a population for prevention of a disease conditions is by enhancing the awareness about the disease. Any awareness programmes would reap optimal outcome if planned to build upon the existing knowledge.

Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome (HIV/AIDS) is a cluster of various health conditions caused to a person infected with the human immunodeficiency virus (HIV). About 70 million people worldwide have been affected by the virus contributing to the death of 50% of the infected people. As per reports 36.7 million people were infected and living with the virus by the end of 2015 (UNAIDS). The projection on the prevalence of the disease in India for the year 2015 is between 0.26% - 0.32% (National AIDS Control Organisation, 2015).

It is very essential that the children in pre adolescence and adolescence groups have the awareness about the etiology and consequences of the disease as this is the most vulnerable group so far as reproductive behaviour and use of psychoactive drugs is concerned. The Government (masked for review) has been carrying out an intensive campaign to create right awareness about HIV/AIDS through media to prevent health risk behaviour and also to dissipate the misconceptions about it.

The key to effective prevention through awareness programmes is primarily to assess the level of knowledge of HIV/AIDS among children. Studies have been conducted to assess such knowledge. Surveys done

on school samples to measure the knowledge of AIDS found that the students were aware of only two modes of transmission of HIV—sexual intercourse and intravenous drug use. Students who were taught about HIV/AIDS had better knowledge than those who weren't taught (Anderson, Kann, Holtzman, Arday, Truman, & Kolbe, 1990). It was found 95.1% had knowledge that HIV is transmitted through unprotected sex and 75.8% had knowledge that HIV could be transmitted from mother to child. The major source of information about HIV/AIDS came from television which was 85% (Gupta, Anjum, Bharadwaj, Srivastav & Zaidi, 2013). 86% of the respondents know that unsafe sex causes HIV. There was inadequate knowledge too, 47% did not know that sharing razor with a HIV positive person would be contracting the virus (Bhattacharya, Cleland, & Holland, 2000). Majority of adolescents had moderate level of knowledge about AIDS but they lacked knowledge in sections of transmission and prevention of HIV/AIDS (Mahat& Scoloveno, 2006). 48% only knew about sexual transmission of HIV/AIDS, 14.9% of them knew condom use as a preventive measure. 9.5% of children only heard about HIV/AIDS in their school programmes (Lal, Nath, Badhan, & Ingle, 2008). There was a low and inconsistent knowledge about AIDS and there were misconceptions regarding symptoms, treatment, and preventive measures (Zhao, Li, Stanton, Mao, Wang, Zhong, & Zhang, 2009). After majority of students (70.70%) believed that condom is a best preventive against AIDS, the next majority believed safe blood transfusion (43.75%) and slightly less percentage of students (40.23%) believed the usage of disposable syringes as a preventive (Shinde, Trivedi, Shinde, & Mishra, 2017).

Studies specified that, the awareness of prevention of HIV was higher among females (94.6%) than males (89.9%), whereas the knowledge about treatment was higher in males (43%) than in females (38.8%) (Opt &Loffredo, 2004; Lawrence, 1993; Rao, Palani, Iyer, & Sathiyasekaran, 2011). Misconceptions go alongside knowledge. It was also found that misconceptions regarding the transmission of HIV was high in (masked for review) adolescents (Thanavanh, Rashid, Kasuya, & Sakamoto 2013, Tavoosi, Zaferani, Enzevaei, Tajik, & Ahmadinezhad, 2004; Mehra, Bhatter, Bhalla, & Rawat, 2014). Misconceptions can be addressed only through free and open discussion. However, the stigma attached to HIV/AIDS just because the etiology includes sexual promiscuity and substance abuse, stands a major inhibitor to open discussion between adults and children.

In view of the sensitivities involved, it is very important that the researcher chooses the suitable method in collecting any data related to HIV/AIDS. Self-report method (Mohammed, Tefera, & Ahmed, 2015, Cabezas, Fornasini, Dardenne, Borja, & Albert, 2013), mixed method approach where self-report questionnaires, in depth interviews and open ended questions have been used (Sahile, Mekuria, & Yared, 2015, Gupta, Anjum et al, 2013). Open ended questions are one of the tools that helps eliciting natural response that reflects the existing knowledge base.

The research questions for this study were formulated as—How do (masked for review) school children conceptualize HIV/AIDS? And Is there a conceptual expansion of HIV/AIDS across age? The objectives of the study were to understand the way children conceptualize HIV/AIDS and to track the changes in comprehending HIV/AIDS among children from 6^{th} to 12^{th} class.

II. Method

A combination of qualitative and quantitative approach has been taken for the present study.

Participants

Students belonging to the age group of 11 years to 18 years studying in 6^{th} to 12^{th} class constitute the last unit of sample. For this, three schools catering to socially marginalised children were identified. Out of these one was Social Welfare Residential school exclusively for girls run by the State Government, a co-educational high school managed by a private Cement industry in a remote village, catering to the children from tribal hamlets, and an exclusively boys school run by a Christian missionary for socioeconomically backward children, were included as the first unit of sample. All the students from 6^{th} to 12^{th} class studying in these schools constituted the last unit of sample.

Instrument

A ruled paper that called for basic information such as name, age, gender, class and school on one side and, an open ended question— "What do you understand by HIV/AIDS?" on the other side with six lines for the answers was the tool for the present study.

Procedure

Informed consent was obtained from the school management and assent was taken from the participants after explaining to them the purpose of the study and their right to abstain from participating in the study. The children gathered in their respective class rooms, where the slips of the open ended questions were distributed. They were instructed to write their response in the blank space provided beneath the question. It was

reiterated that each one may differ in their answers and that they would not be assigned any marks for their answers. After receiving the completed answer sheets from the students, they were de-briefed and thanked for their participation.

Data cleaning

A total of 812 children participated in the study. All the response sheets were labelled with a numerical that served as identification number. All the responses were read by the investigators. Those responses that were incomprehensible or incomplete were dropped. By this process a total of 75 response sheets were discarded and remaining 737 responses sheets are taken as final for data analysis.

III. Results

The results of the study are presented in three parts. Part I describes the content analysis. Part II examines the frequency of responses under different themes categorized to understand the concept of HIV/AIDS. Finally, part III examines the developmental trend in children's' conceptualization of HIV/AIDS.

1) Part I: Content Analysis

In part I, content analysis was used to find the broader output of the large sample as in this study. For this, all the responses of the 737 participants were read and re-read several times by two investigators. Both the investigators separately categorised the responses under different sub-themes. The next step required both the investigators to compare their response categorization for each respondent and check for agreement percentage. Both the investigators had complete agreement for the responses of 689 respondents (93.48%). For the remaining 48 (6.52%) agreement was arrived at after discussion on every response so as to arrive a 100% agreement. Thus, every response was placed under a sub-theme that formed a part of a broad theme. The responses under each theme were coded as ND – Nature of disease, SD – Symptoms of disease, CD – Causes of disease, MD – Misconceptions regarding the disease and DK – Do not know. These five themes are mutually exclusive. Table 1 consists of theme and sub-theme along with sample responses. Five major themes were evolved from the responses viz., nature, symptoms, causes, misconceptions and do not know.

Table1: *Summary of themes, sub-themes and sample phrases*

Theme and sub-themes	Sample phrases
Nature of the disease (ND)	
Dangerous	"HIV/AIDS is a harmful disease" "It is very dangerous to have AIDS"
Incurable	"There is no medicine for AIDS" "AIDS people have no treatment, they will die"
Communicable	"AIDS spreads from one to another"
Fatal	"Person having AIDS will die" "Death come to AIDS person"
Symptoms (SD)	
Weakness	"AIDS people faint and feel weak" "HIV affected persons look thin"
Collapse of immune system	"AIDS people immune system is weak" "People having AIDS have low immunity power"
Loss of appetite	"They do not feel hunger"
Loss of energy	"No work energy, cannot work with AIDS"
Loss of weight	"AIDS happen means we become very thin"
Causes (CD)	
Sexual promiscuity	"Copulation with many people do for AIDS"
Infected syringes	"Using one injection for many people"
Blood transfusion	"Blood from AIDS person spreads to others"
Spreads from parent to child	"Parents with AIDS, child also will get AIDS" "Pregnant mother give disease to the children"
Misconceptions (MD)	
Only affects female	"This disease affects only girls" "Bad girls will get AIDS if they do wrong things"
Spreads through hugging and kissing	"Hugging and kissing give AIDS"
AIDS affected feel upset and down	"People with AIDS feel upset and low"
Supporting the social stigma	"AIDS people must leave their family and go away" "HIV/AIDS people should be kept alone in room"
AIDS is a bad disease	"AIDS is a very bad disease" "Bad people get punishment with this disease"
AIDS people commit suicide	"If AIDS come persons do suicide" "People suffering will kill themselves"
Do not know (DK)	"Sorry I do not know what is this" (Includes "I don't know", "No idea" responses)

There was a possibility of more than one response from each student. Thus a total of 937 responses were classified under major themes and sub themes. It may be observed that from Table 1 three major themes emerged from the responses after excluding the 'misconceptions' and 'do not know' category. The sub themes under the major themes of Nature of the disease, causes of the disease, and Symptoms of the disease consisted of valid sub-themes connecting the major themes.

2) Part II: Frequency of responses for major themes

The class wise distribution of responses under different themes were examined. Table 2 shows class wise frequency and percentage for different themes including 'misconceptions' and 'do not know' responses.

***Table 2** Summary of percentages of responses class wise*

Class	Responses	*Frequency and(Percentages) of responses*				
		Theme 1 Nature of disease	Theme 2 Symptoms of disease	Theme 3 Causes of disease	Theme 4 Misconceptions	Theme 5 Do not know
6	151	41 (27.15)	14 (9.27)	12 (7.94)	21 (13.91)	63 (41.72)
7	169	66 (39.05)	21 (12.42)	10 (5.92)	23 (13.61)	49 (28.99)
8	180	51 (28.33)	13 (7.22)	44 (24.44)	28 (15.55)	44 (24.44)
9	233	87 (37.33)	36 (15.45)	66 (28.32)	14 (6.00)	30 12.87
10	77	37 (48.05)	6 (7.79)	18 (23.37)	13 (16.88)	3 (0.38)
11	59	30 (50.84)	1 (1.69)	21 (35.59)	4 (6.77)	3 (5.08)
12	68	33 (48.53)	4 (5.88)	24 (35.29)	5 (7.35)	2 (2.94)
Total	937					

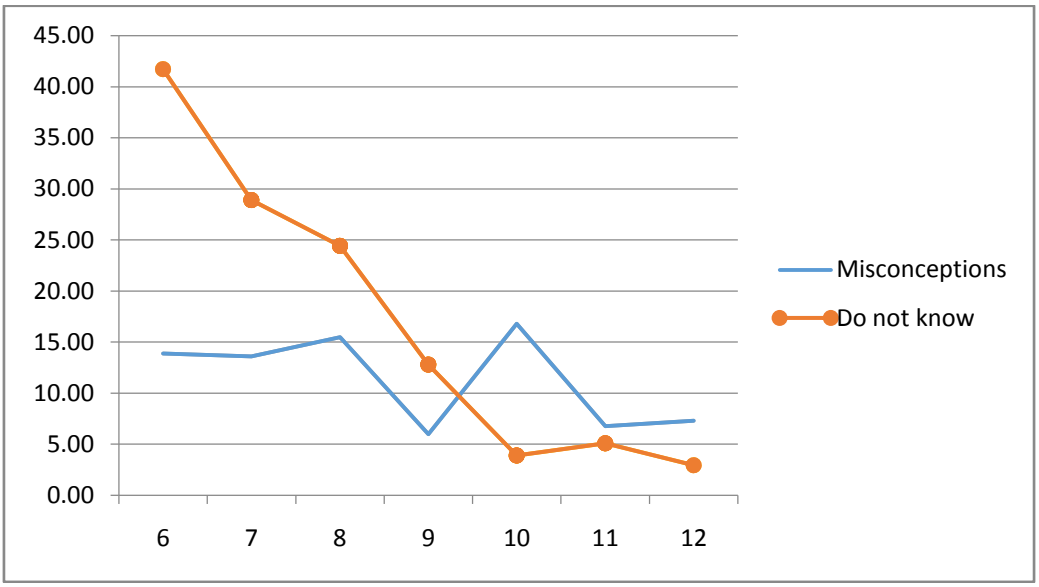

***Figure 1** representing a line graph for the percentages of responses, for the themes of Misconceptions and Do not know*

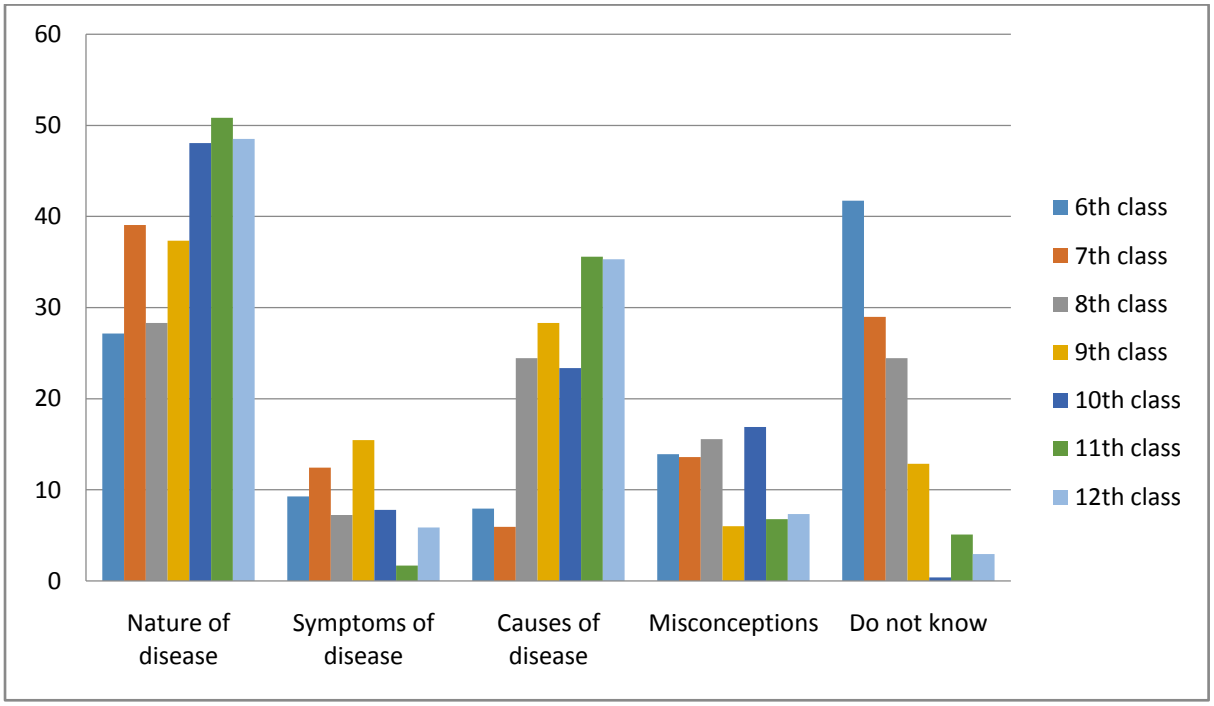

Figure 2 *Comparison of thematic responses across class*

It may be observed that from table 2 that (masked for review) children's knowledge about HIV/AIDS is dismally low. This is evident from the fact that just about 50.84% of the responses from children in 10th class revealed about the nature of the disease, which is the highest percentage of response under this theme. Similarly, the percentage of response under the symptoms of the HIV/AIDS touched the double digit in response of the 7th and 9th class students. The largest percentage of response indicating the knowledge about the causes of HIV/AIDS is found to be around 35% among 11th and 12th class students.

It may be observed from the line graph in figure 1, that the 'do not know' responses showed a progressive decline across classes. There is a sudden drop in this category of responses from 9th class to 10th class. Though there is a general declining trend in misconception, it is alarming to see a spurt of raise in it in 10th class which is surprising and demands in depth scrutiny. The figure 2 showing the bar graph indicates a general trend of low level of knowledge regarding the symptoms, followed by the cause.

3) Part III: Quantification of conceptual diversity through computation of Entropy

This part of the results presents the divergence in the conceptualisation of the disease among students from 6th class to 12th class. Divergence is calculated by computing the 'entropy' value. Entropy refers to 'disorderliness' in the context of Physical Sciences. It is explained in terms of lack of convergence in response indicating lack of definite patterns. In the present context entropy of responses of a class refers to the spread of responses of that class across themes. Entropy is calculated for each class by using the formula in the following steps.

$$\text{Probability } \boldsymbol{P} = \frac{\boldsymbol{No.of responses per theme}}{\boldsymbol{Total number of responses in each class}}$$

The values of *P* were converted into logarithmic values for easy understanding and interpretation. Here 'I', stands for Information (on probability). The logarithmic value is multiplied by the P for a class in order to arrive at Entropy (E) value.

$$\boldsymbol{I = - log\ (P)}$$

The total sample is not equally distributed across classes. Since the Entropy value is the logarithmic product of number of responses in a class divided by the total responses, the value is impacted by the size of each class. Hence, there is a need to balance the factor of class size. This is possible by dividing the class size by the total sample. This is explained by the following formula where BF refers to Balancing Factor.

$$\boldsymbol{BF} = \frac{\boldsymbol{Sample size of the class}}{\boldsymbol{Total sample size}}$$

The Divergence Index (DI) of conceptualisation of HIV/AIDS is arrived at by dividing the Entropy value (E) with the Balancing Factor (BF). The Divergence Index is also called Neutralised Entropy.

$$DI = \frac{E}{BF}$$

Table 3 presents the derived scores for classes 6-12

Table 3: *Entropy and Divergence Index of conceptualizing HIV/AIDS in students across classes.*

Class	Respondents	Responses	E	DI
6	131	67	0.28	1.58
7	146	97	0.08	0.40
8	158	108	0.41	1.91
9	148	189	0.45	2.24
10	64	61	0.37	4.26
11	43	19	0.33	5.66
12	47	20	0.28	4.39
Total	737	561	2.4	

Note. N=Total number of participants; E= Absolute entropy; DI =Divergence Index (Neutralized entropy).

Table 3 reveals the Absolute Entropy scores and Divergence Index or Neutralised Entropy values on conceptualization of HIV/AIDS from 6th class to 12th. It may be observed from the table that the classes 6th through 8th, number of responses were visibly much lower than the number of participants indicating that a large proportion of students resorted to 'do not know' response. This is reflected in figure 1 that indicates a steady decline in 'do not know' response with the progress of class from 9th class to 11th class. The Divergence Index has shown a steady progress (DI for 9th, 10th, 11th class are 2,24, 4,26 and 5.66) respectively. This can be easily perceived in figure 3.

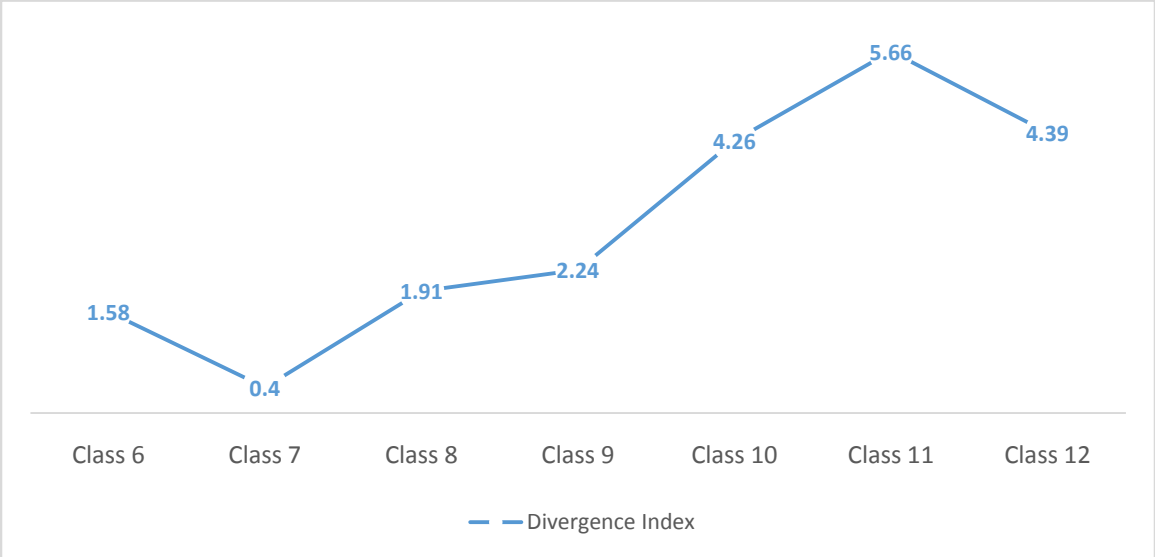

Figure 3 *showing the developmental trend in the Divergence index across the classes*

In a nut shell, the results revealed dismally inadequate knowledge about HIV/AIDS (masked for review) school children on causes and symptoms. Though inadequate knowledge, there is a progressive developmental trend in knowledge about HIV/AIDS. Further the children were found to hold a number of misconceptions about HIV/AIDS, which again showed a declining trend across classes, which showed a progressive declining trend.

IV. Discussion

The current study examined the conceptualization of HIV/AIDS among children studying in schools. It may be reiterated that unfortunately the disease continues to have a stigma carrying out open discussion on it similar to equally dangerous disease like cancer is not found to be as common. The purpose of using open-ended question was served, since the response belonged to themes ranging from nature of HIV/AIDS to misconceptions regarding it. Since the question was enquiring about HIV/AIDS, it elicited responses related to stigma which are categorised under misconceptions.

This reflects in low level of knowledge about nature, symptoms and causes of the disease and higher levels of misconceptions and admitting ignorance. There is also a possibility that the 'do not know' response reflecting ignorance could be one of the inhibiting factor than ignorance. The investigator's observation suggests such a possibility.

One of the investigators recorded in the observation sheet that there is a possibility that many children took shelter under 'do not know' response because of the stigma. This was evident from the responses observed by the investigator. For example, there were spontaneous soliloquy like 'oh my God' when they read the question.

The results indicated that a developmental trend but a deviation with a drop in 7^{th} and 12^{th} class. These two stages are characterised by the stages of early adolescence and peak adolescence.

Children in 6^{th} class may feel the eagerness to exhibit their knowledge on any concept with not much inhibition or hesitation. However, the children in the 7^{th} class are in their first threshold of early adolescence with a preoccupation of observation of changes in reproductive system in one's own body. A little information on HIV/AIDS coloured with social stigma successfully creates misconceptions as well as inhibitions that prevents them to clarify their ambiguity. Then the safe position is to express ignorance. The drop in Divergence index among 12^{th} class students is also intriguing. An observation of table 2 reveals that there is a relatively low percentage of response on the theme of symptoms of HIV/AIDS. Their thought process seems to be in terms of the nature of the disease and the causes. Given their age and vulnerability, perhaps the communication reaching them is more in terms of the nature of the disease and the etiology, both with an aim to circulate abstinence from unsafe sexual practises and drug abuse. However, this inference needs to be substantiated with in depth interviews.

Though the data and statistics indicate presence of awareness about HIV/AIDS, there is more to it. Based on the investigators observation, two aspects have been found among the respondents during the interaction. Firstly, the stigma attached to the very word HIV/AIDS, where they felt that the mere utterance of HIV/AIDS is 'bad'. Studies justify that there is a negative attitude towards AIDS infection and it is associated with 'immoral behaviour' which results in fear and avoidance (Maman et al., 2009; Ti et al., 2012). Such an avoidance is oriented towards even denying even any knowledge regarding AIDS, thus protecting a 'good boy/good girl' picture. This could prove detrimental in implementing preventive public health goals. This would prove detrimental in reaching the preventive public health goals.

The present findings are also supported by several studies that were done in the past to find out the knowledge and awareness of children and adolescents. A qualitative study conducted with focus groups to elicit knowledge and attitudes of children about AIDS. Misconception was prevalent in lower grade students and they also a difficulty in stating the causation of the disease. Older grades students' response was characterised by complexity in response when compared to lower grades. (Hoppe, Wells, Wilsdon, Gillmore, & Morrison, 1994). Current study corroborates fittingly with the above study, since even in the current study misconception was high in lower grades students and Divergence index (variety of responses) showed a upward developmental trend.

In such a scenario, the role of an efficient tool can be played by education. Though 74% of adolescents wanted the introduction of HIV/AIDS in the curriculum (Verma, Nandan, & Shrotriya, 2016), in reality only 9.5% of children heard about HIV/AIDS in their school programmes (Lal, Nath, Badhan, & Ingle, 2008). However, after a few years 66.3% respondents had responded that HIV/AIDS was part of their curriculum (Trivedi, 2014). Though there is an improvement, it calls for more effort in this direction. Education in such a case can be used as a tool to address the stigmatizing attitudes and gaps in HIV/AIDS knowledge and awareness (Pramanik, Chartier, & Koopman, 2006).

V. Conclusion

It is to be appreciated that the children belonging to low socio economic background have comprehensively conceptualized HIV/AIDS, in terms of its nature, causes and symptoms, though the extent of knowledge is considered inadequate. The open survey helped in finding the range of responses that the children gave across different age groups. Developmental trend in terms of conceptualizing HIV/AIDS, the indication of social stigma associated with HIV/AIDS and the large misconception that hovers around it are the noteworthy implications of the study conducted. Discussing the issue objectively and openly is the need of the hour to fight stigma.

For better comparative study, the other socio economic strata should be included in the study.

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