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Full Length Research Paper

Outbreak of Mass Psychogenic Illness at a High School, Amhara Region, Ethiopia, April, 2010

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Abstract

Mass psychogenic illness has been recognized for centuries and has the potential for significant adverse public health consequences. The objective was to determine the cause of illness, guide interventions and improve understanding of similar events in the future. Local health officials requested assistance with a suspected outbreak at a high school in rural eastern Ethiopia in April 2010. Data was collected using a line list containing socio-demographic characteristics and clinical symptoms. Detailed discussions were also conducted with the school principal, administrators, teachers and local disease surveillance officers. Then data was analyzed using Epi Info v3.3.2. The outbreak began on April 7, 2010 and cases continued to occur for 22 days. Forty four cases were identified. All were females and majorities (75%) of them were Muslims. The major clinical symptoms were breathlessness, fear and crying, anxiety, and inability to move limbs. The median duration of illness was 3 hours with a range of 2 to 96 hours. Thirteen (27.3%) and six (13.6%) of the cases reported the causes of illness were "evil-devil force" and stress, respectively. however 59.1% replied they didn't know the cause. No environmental toxicity, food-borne illness, infectious disease or societal conflicts were identified to be associated with the illness. This outbreak was appeared to be the result of mass psychogenic illness. Conducting an investigation, providing immediate reassurance, and timely psychiatric support and counseling at the school and community level could minimize the impact of such events in the future.

Keywords: Mass Hysteria, High School Girls, Ethiopia.

INTRODUCTION

Mass hysteria has long history with significant public health problem and economic cost repercussion. It is characterized by the rapid spread of conversion disorder, a condition involving the appearance of bodily complaints for which there is no organic basis. In such episodes, psychological distress is converted or channeled into physical symptoms (http://www.skeptically.org/skepticism/id11.html).
Conversion formerly known as hysteria is considered a psychiatric disorder in the International Statistical Classification of Diseases and Related Health Problems (ICD-10) (WHO, 1992) and Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV) (American Psychiatric Association, 1994)

Symptoms of Hysteria/conversion disorder are most common in young women, more common in rural areas-among uneducated people and in the lower socio-economic classes and generally higher among patients from minority ethnic groups (Colm and Simon, 2006).

Studies suggest that a peak onset of conversion disorder occurs in the mid-to-late of 30s and it may present at any age but is rare in children younger than 10 years or in the elderly (Carson et al., 2000; Stefansson et al., 1976). During 1973-1993, 70 outbreaks of epidemic hysteria were identified all over the world and 50% of these outbreaks occurred in schools, in factories (29%), in towns/villages (10%) and

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other various settings (11%) (Boss, 1997). The outbreak of mass psychogenic illness or hysteria in USA (Knight et al., 1965), in Jourdan (Kharabsheh et al., 2001), and in South Africa also took place in schools and the majority of cases were females.

Another report on 21 February 2005 from Australia, at Melbourne's domestic airport indicated the suggestive occurrence of mass psychogenic illness among 57 cases which primarily believed to be caused by a mysterious "gas leak". The incident disrupted domestic flights over 2 days and cost an estimated three million dollars(Bartholomew, 2005). This report gave a lesson and clearly showed that epidemic hysteria need to be emphasized by the public health and other sectors too.

In Ethiopia, Epidemic hysteria reported from Gondar city, in north western part of the country in 1982 (Maru, 1982). Ethiopia is a nation of multiethnic society with low income, different socio-cultural and existence of strong religious beliefs. However, epidemics of hysteria is under reported or not studied well across the country. Thus the objective of this study is to describe the outbreak which occurred in Bati, guide interventions and improve understanding and recognition of similar events in the future.

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MATERIALS AND METHODS

Study area and population

In the 2nd week of April, 2010, the Amhara Regional State Health Bureau has got notification from Oromia zone health office about the occurrence of a mysterious illness in Bati high school. Soon after, the bureau delegated the nearby zone health office, south Wollo to visit the school. After getting feedback from south Wollo, a team lead by an officer from the Bureau visited Bati town and under took an investigation at Bati high school from April 26-May 02, 2010.

Bati town is 418 kilometers from Addis Ababa on a highway through Kombolcha town to Afar. The school had 1283 students with 0.56 male to female ratio and the total population of Bati district is estimated at 107, 343 (FDREPCC. 2008). All girls affected by the event were taken as the study population.

Data collection

A case register log from the health center and line listing prepared by the district health officials was used to collect the initial data such as symptoms of illness and socio-demographic characteristics. The investigation team rebuilt the line listing and set working case definition based on the symptoms of illness. Then cases (new and prevalent) and their parents were interviewed for some characteristics using the new line listing.

The team also undertook group discussions with school principal, teachers, district surveillance officers and town administrator about physical, psychological, and social factors that may have contributed for the onset and spread of outbreak.

Statistical analysis

The quantitative data was entered to computer in Microsoft Excel, checked for completeness with original data sheet (line listing). Then analysis was made using Epi Info version 3.3.2. The qualitative data analysis was made manually and statements were written in a logically way.

Ethical issue: The investigation was done after the approval of the Amhara regional state health bureau and Bati district health office. Consent was also secured from Patients & their parents.

RESULTS

A total of 44 cases were identified in Bati high school during April 26-May 02, 2010. All of them were females, the median age was 16 years old, and 33 (75%) of them were Muslims. Twenty four (54.5%) of the cases address was in town from four different villages (kebeles) and the rest were from rural villages of the district.

The onset of the outbreak was on 07 of April 2010, when a 15 years old girl showed symptoms of unknown illness at school. On 09 of April 2010, twelve students showed similar types of symptoms during class hours. Only two of the twelve affected students were classmates of the index case. New cases continued to occur up to 29 of April 2010 (Figure 1).

The major clinical symptoms were breathlessness, fear and crying, anxiety, unable to move limbs/falling, fatigue, epigastric pain/cramp, fainting/convulsions and head-ache (Table 1). The duration of illness ranged from 2 to 96 hours and the median was 3 hours. The frequency of attack of illness among the majority [35(79.5%)] of cases was only ones, two times in 7(15.9%) cases, and three times in 2(4.5%) cases. 27(61.4%) of the cases were grade (class) 9 in eight different sections(rooms), 16 (36.4%) were grade 10 in four different sections and only one case was from grade 11. School performance of cases also showed as 6 (13.6%) good, 25(56.8%) average and 13(29.5%) were below average performers.

Twenty five (56.8%) of the cases response on perceptions about the root cause of the disease was "I don't know". But 13 (27.3%) and 6 (13.6%) of them replied that evil-devil sprite and psychological stress responsible for their illness. Parents' perception/belief about treatment of the event also indicated as ritual at school using Quran/Bible [15(44.1%)] and change to

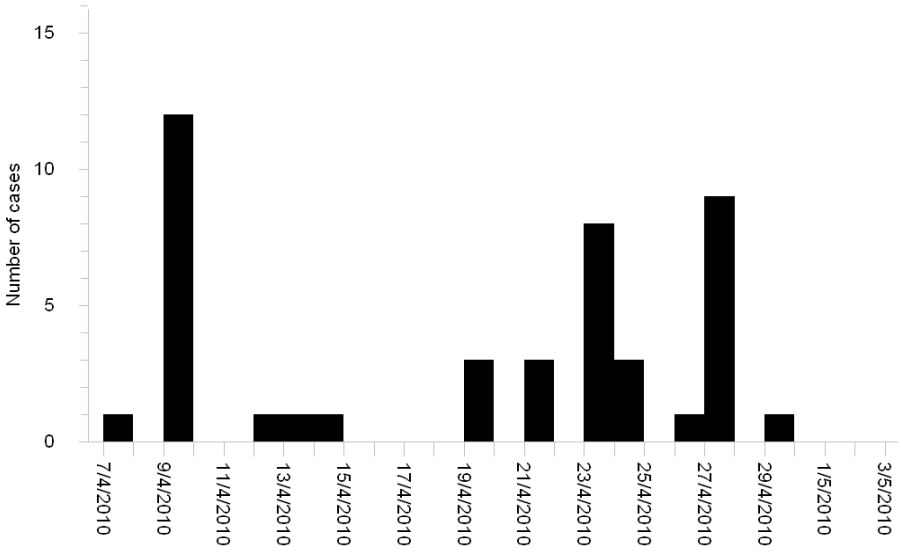

Figure1. Epidemic curve of hysteria outbreak in Bati high school, Amhara, Ethiopia-April 2010

Table 1. Major symptoms manifested among Bati high school girls, Amhara, Ethiopia-April 2010

Symptoms	Frequency	
	No.	%
Shortness of breath	43	97.7
Fear and crying	30	68.2
Anxiety	27	61.3
Unable to move limbs/falling	13	29.5
Fatigue	8	18.2
Epigastric pain and cramp	6	13.6
Convulsions/fainting	4	9.1
Head ache	4	9.1
Sleepiness	2	4.5

another school [7(20.5%)] (Table 2).

Thirty (68.1 %) cases reported ”I don’t know” about the triggering factors for their illness whereas 10(22.8%) and 4(9.1%) cases replied seeing another case and thought that the event triggered their illness. Interviewing for underlying cause also revealed chronic illness and history of death of family member in 2 and 3 of the cases.

Based on the detail-discussion with school principal and teachers, it was found that the class rooms have good windows with nice ventilation, no unusual odor, and no dispute among school community. But in the school, blaming of unidentified teacher being as an evil (or ‘buda’in Amharic) was disseminated by the students. Due to this rumor teachers faced difficulty in reassuring the cases.

The spiritual ceremony by religious leaders that has been conducted on 25 of April 2010 at the school was recognized during our discussion with the city administrator and health officials. In this session, the exclusion of food insecurity, any tribal or religious conflict and infectious epidemic in the district or neighboring districts was scrutinized.

DISCUSSION

The index cases have no underlying problems like chronic illness, parental divorce, death or imprisonment of family member. They had no conflict with teachers or students and no academic problem unlike a Zambian study which found educational problem (below average) and emotional problem in an index case prior to the epidemic (DHADPHALE and SHAIKH, 1983). Major symptoms which were identified in this outbreak was similar with those outbreaks which occurred in Los Angeles-USA (Small et al., 1994), and in South Africa (SA) (Govender, 2010), however the frequency of symptoms are higher than those from the above mentioned studies.

Table 2. Socio-cultural characteristics and triggering factors of the outbreak, Bati high school, Amhara, Ethiopia-April 2010

Characteristics	Frequency	
	No.	%
Patient's perception about the root cause of the event (n = 44)		
Evil - devil force	13	29.5
Stress (psychological)	6	13.6
Food poisoning	0	
Air toxicity	0	
Infectious disease	0	
Unknown (I don't know)	25	56.8
Patients' perception on treatment of the event (n = 32)		
Religious ritual at the school	18	56.2
Parents and religious leaders discussion	10	31.2
Study to identify the cause	1	3.1
Unknown (I don't know)	3	9.3
Parents' perception for treatment of the event (n = 34)		
Change school	7	20.5
Epidemic committee bring solution	2	5.8
Religious ritual at school	15	44.1
Having strong religious belief	4	11.7
I don't know	6	17.6

Majority [30 (68.1%)] of cases respond "I don't know" about their perception on factors that triggers the illness. But 14 (32%) cases replied that seeing another while on attack and thought that the event triggered their illness. This type of spread of symptoms from one to another by watching a person on attack is indicated in different reports (Maru, 1982; Govender, 2010). According to the cases and parents beliefs, the possible root cause and treatment of the disease is socio-cultural like, devil-evil forces caused the disease and religious ritual (using Quran and/or Bible) at the school will resolve the problem. Similar finding (25.0%) on evil forces as a root cause was indicated in a study in Taiwan (Chen et al., 2003). In fact there were wide spread of rumors such as "the school is built on graves area of ancestors and has a strong spirit" and "unidentified teacher was blamed as being evil". These beliefs strengthened more during the incident of the event and religious leaders were asked and conducted spiritual ceremony at the school. We believe these triggering factors fit for the event as it was supported by another study that the exact trigger and content of an outbreak reflect the cultural setting of a society (Mohr, 1980).

Another point which couldn't be neglected is the frequency of attack (97.7%, 43) which occurred among Grade 9 and 10 students. In Ethiopia these two grades(classes) are very determinant to stay in high school for preparation to join university in addition the date of the outbreak was the time in which students prepared for national (grade 10) and end year final exam after 2 months. This could be supported by a study which showed a 42.8% (n=35) outbreaks occurrence during the last 2 months of the school year, at a time of intense group involvement and examinations (Francois, 1999). However, our study is only based on descriptions and it is difficult to link the possible definitive risk factors of the outbreak.

In this outbreak all the affected cases were females and 75% of the cases were Muslims. The occurrence of higher proportion of Muslim cases could be the reflection population size of Muslims in the school and in the district.

The issue of frequent attack of females in similar outbreaks reported worldwide in various studies (Colm and Simon, 2006; Knight et al., 1965; Kharabsheh et al., 2001; Bartholomew, 2005; DHADPHALE and SHAIKH, 1983; Small et al., 1994; Govender, 2010). But it couldn't be explained why such outbreaks had been related to females early from ancient Greek to the modern era.

Interventions: The primary intervention conducted was education for the students and school staffs. The medical team of the district health center and psychiatric practitioner from Dessie hospital gave health care service, i.e., reassurance for new and follow up cases including parents and other school community members. It also supported the epidemic investigation team for any possible organic cause.

In conclusion, the outbreak occurred in Bati high school girls was an epidemic of hysteria. Overcrowding of students at school, conflict within the school staffs or among students, unusual climate change, outbreak of illness, and political or religious conflict in the area was excluded. But socio-cultural beliefs like evil-devil forces together with tension on the academia could be the

triggering factors.

Conducting short investigation, providing immediate reassurance, separation of ill from non ill and follow up is necessary in minimizing an epidemic. Though prevention of this type of outbreak could be challenging, education on psychiatry and different risk factors related to mass hysteria shall be given at school.

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