

Mass Psychogenic Illness in Haraza Elementary School, Tigray, Northern Ethiopia: Investigation to the nature of an Episode.

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Abstract

Background Mass psychogenic illness has been documented for more than 600 years in a variety of culture, ethnic, and religious settings. The aim of this study was to assess the nature and characteristics of mass psychogenic illness in Tigray, Northern Ethiopia,

Methods School based cross-sectional study was conducted in haraza elementary school from January –February, 2020. Students who were victims of an episode were subjects of the study. A total of twelve students were investigated using semi-structured questionnaire for quantitative study. Seven key informant interviews were conducted using guiding questionnaires. Quantitative data was analyzed using XL sheet while qualitative data was analyzed manually.

Result the mean age of study participants was 14 years ($SD\pm 1.3$). Majority (87%) were teenage female students. The incident was unspecified disease with psychiatric disorder, migraine and syncope with no plausible organic causes. An important feature of migraine and syncope was their co-morbidity with mass psychogenic illness. The community perceived that Evil-devil force and blaming as being an evil-eye were common causes for the occurrence of an episode.

Conclusion lack of empirical knowledge and awareness about its management and prevention among community members and health professionals resulted exaggerated rumor that would be perceived as newly emerging disease that affected school activities. Integrating MPI in PHEM package at health facility level, advocacy workshops for media and other relevant stakeholders will minimize its impact for the future.

Introduction

Mass psychogenic illness (MPI) or mass hysteria is not a rare phenomenon around all corners of the world. It has been defined as a group of physical signs and symptoms that suggest the presence of organic illness but without any clinical and laboratory evidence of disease [1, 2]. Since the year 1374, it has been documented for more than 600 years in a variety of culture [3–4], ethnic [5], and religious [6–7] settings.

There is no conclusive evidence about the causes of the illness but psychological factors, environmental factors, different stressors, conflicts, lower level of education, lower socioeconomic status, minority race, and history of abuse or trauma were commonly postulated causes [8, 9]. It is common in rural areas among uneducated people, lower socioeconomic classes, and ethnic minority groups. It is usually seen in girls and teenager groups. The episode prolonged from weeks to months [10, 11].

Evidences from various studies revealed that it commonly affects people who live in groups; at Schools (50%), Town and villages (10%), Factories (29%), family groups (4%). Sometimes it is notified from Nunneries, Boardinghouses, Prisons and Religious institutions [12–14, 15].

Majority of the outbreaks are recognized due to environmental “trigger” such as bad smell, abnormal sound, a suspicious looking substance, or something else that makes member of the cohesive group exposed to a danger [13]. It is typically begins when an individual with index case becomes ill hysterically during a period of stress followed by multiple people experiencing of the same symptoms [14–15]. Among the total reported hospitalized ill students in Bangladesh, 88% complain about consumption of cake with abnormal smell or taste. Among these, 20% of them felt ill by only seeing other ill students in the school [16]. Satanism and evil devil force, punishment by God, due to the presence of toxic chemicals, polluted environment, cold air, and using family planning injection or pills had been discovered around the schools and community members in Ethiopia [16–19].

In Africa evil spirit, witchcraft, Satanism or failures to perform cultural and religious rituals have been mentioned as the causes of the illnesses [5]. Similar finding was reported from Kombolcha of Northern Ethiopia, Derashe of Southern Ethiopia, [17–18]. On the other hand toxic chemicals and environmental pollution have been notified in western setting; India due to toxic fumes [13], these attributions in Africa, lead many victims commonly seek treatment from different religious and traditional healing sites [13–18]. This is also practice in Ethiopia context in which more than half (63.9%) of study participants in Derashe district of Southern Ethiopia reported that they had been visiting traditional healing services, 8.2% had sought treatment from religious services, 75.3% modern health service, 5.1%, all the three treatment sites, namely traditional healers, religious healers and health institutions[18].

It is recognized as a rapid spread of illness, signs and symptoms mainly affecting members of a cohesive group that has been originating from a nervous system disturbance involving excitation, loss, or alteration of function, where by physical complaints that are exhibited unconsciously have no corresponding organic etiology [2].

Common symptoms of mass psychogenic illness reported were nausea, dizziness, fainting, headache, abdominal pain, hyperventilation, cough, fatigue, drowsiness, weakness, watery eyes, chest pain, vomiting, communication difficulties, laughing, and fainting were common in African settings [8, 10, 15–17].

Mass psychogenic out breaks were reported in different African settings including Ethiopia [14–16]. Similar outbreaks of MPI were also reported in different Ethiopian settings; Bati, Kombolcha, Derashe, and Gondar [8–17–19]. Despite the difference in culture, religion and age range, the clinical presentation of the cases during an episode were similarly reported. All reported incidents brought a common intense of a public and community terror to the extent of collapsing school and occupational activities. Tough there is an increase in awareness among health professionals; it is still under considered, under reported and still causing significant health and social problems in the country.

However, epidemics of hysteria is under reported or not studied well across the country. Besides, none was conducted in the study region in Tigray region, Northern Ethiopia. The incident was happened for the first time in Eastern parts of Tigray, Northern Ethiopia in Erop district. Its clinical characteristics, community perception about the root cause, treatment and its prevention mechanism were not known.

The aim of the study was to assess the episode of mass psychogenic illness in Erop districts, Tigray region, Northern Ethiopia and to guide interventions and improve understanding and recognition of similar events for the future.

Methods

Study design and settings

A school based cross-sectional study was conducted from January-February 2020 in Erop district, Tigray, Northern Ethiopia. The district administrative setup composed of 35,000 people [20]. Mixed method approach was used involving both quantitative and qualitative data collection methods.

Sampling and sample size

A total of twelve complaints of unknown disease were enrolled for the study. For quantitative data, standardized [8] semi-structured questionnaire was used to review the nature and characteristics of the disease from hospitalized patients. Convenience sampling method was used to select participants for qualitative data in which seven key informant interviews (KIIs) were conducted. Participants were from community members, health professionals and school members.

Data collection procedure

For quantitative data, record review from line list on data on socio-demographic, symptoms of illness, onset and duration of illness was conducted. See variables in “Additional file 1”. In some cases, card review was done to summarize patient history and other investigations done during hospital admission in order to rule out recent underlying medical illnesses and organic causes. Key informant interviews were facilitated using guiding questionnaire adopted from similar study conducted in Dershe district of Southern Ethiopia [18]. Home to home interviews were conducted with families of index case and community members. Participants were interviewed alone to secure confidentiality and to avoid information bias. Quantitative data was collected by a physician working in Duhan Primary Hospital while principal investigator conducted key informant interviews.

Data management and analysis

Quantitative data exported and analyzed using XL sheet for. Descriptive data was used to illustrate the prevalence of an incident among hospitalized patients. Verbatim transcription of KIIs was done, and transcriptions were translated from “Eropigna” to “Tigrigna” and back to English. Some of them were directly translated directly from “Tigrigna” to English. We used thematic analysis [21]. Qualitative data analysis was involved reading scripts several times, identifying themes and sub-themes, and grouping data for interpretation [21–22]. Transcriptions were read multiple times to validate transcription and familiarize with predetermined study objectives and themes. Preliminary themes were prepared by categorizing data into groupings. Key quotes were selected, and classified concurrently to clarify interviewees’ perception about the incident. Preliminary themes were refined and finally, groups of related

data were clustered to similar themes and categories. Quotes that best described main themes were chosen and presented.

Results

Socio demographic characteristics

Among the total 12 study participants, Majority (87%) were teenage female students. The age of victims of the episode ranged from 13 to 16 years with a mean of 14 years (SD \pm 1.3). All participants were from Haraza kebele where index case was lived.

Onset and duration of an episode

The incident was reported in 13 December 2019, when a 13 years old girl had been complaining about unknown disease. New cases were continued up to 16, December 2019 reaching a total of 12 cases (See Fig. 1). Duration of an illness was ranged from 1 to 3 days, with a mean of 2 (SD \pm 0.8) days.

Clinical and laboratory investigations

Major clinical symptoms and signs observed during hospital admission were unable to talk (75%), shouting (66.7%), dizziness (58.3%), head ache (58.3%), sleepiness (58.3%) (See Table 1). However, the clinical findings showed normal vital signs (the average blood pressure ranged from 70–108/67–74 mmHg; pulse rate, from 73–98 beats per minute; body temperature; from 36-37.4 °C and Respiratory rate; from 16–24 per minute). Besides, laboratory investigations were done for hospitalized cases. Findings revealed that widal test was non – reactive, hemoglobin range 13–14 Mg/dl, blood film with no hemo parasite seen; random blood sugar range was 97–304 Mg/dl. Having these realities, the clinician ruled out no plausible organic cause illness and he categorized the incident as unspecified disease with psychiatric disorder, migraine head ache, and syncope.

Table 1
Common reported symptoms of mass psychogenic
illness in Haraza Elementary school, Tigray, Northern
Ethiopia, 2019 [n = 12]

Categories	Number	Percent
Head ache	7	58.3
Dizziness	7	58.3
Unable to talk	9	75
Loss of appetite	6	50
Low-grade fever	3	25
Abnormal body movement	3	25
Cough	3	25
Sleepiness	7	58.3
Shouting	8	66.7
Laughing	3	25
Unconsciousness	6	50
Breathlessness	6	50
Generalized weakness & fatigue	6	50

Findings from qualitative data

Seven key informant interviews were conducted with parent of index case, community member, school principal, a teacher teaching while an incident was occurred, health extension worker, surveillance officer, and with a physician managing an incident in hospital (See Table 2). The mean age of study participants was 43(SD SD ± 12.6). The information gathered from the interview was categorized in the following six themes; on set of an episode, Community perception about the incident, Treatment sought by the community, Health professional awareness, and psychosocial impacts of the illness (See Table 2).

Theme 1: On set of an episode

During an interview, the incident was reported for the first time. The onset of illness was traced following the index case of 13 years old student complain about unknown disease while learning at school as expressed by her teacher; "I had been teaching English for grade 6th after a while index cases was disappointed and asking me to be out from the class and I am letting her to be out with her three class mates. After a while they also felt uncomfortable and started showing similar symptom with her" (KII ≠ 2)

As the news spread among other students, no of cases started increasing making a total of twelve within three consecutive days. Then the school was decided to be closed when an agreement was reached by school members, community and political leaders as there was high community frustration and psychosocial disturbance: "Because of the incident, students fear of being affected by the illness considering it as communicable disease lead a schools to be closed for three days and a number of students were recorded as dropout from school" (KII ≠ 1)

Theme 2: Community perception about the episode

During an interview, no specific cause of the incident was forwarded. However, a common manifestation was characterized by irrational behavior or beliefs. Majority of the participants of the interview illustrated that the triggering risk factor was evil devil force other than environmental factor (See Table 2). Two informants expressed their own concern about community perception about its root cause ; "this was a new incident and we never experienced with such an event but this might be due to Satanism and an Evil devil force that came in line with the new political reform in the country" (KII ≠ 2).

" families of the patient informed me not to provide treatment with injection since our students were ill due to the presence of evil-eyed teacher in the school " (KII ≠ 2).

Theme 3: Treatment sought by the community

During an interview common treatment practice sought by the community during the incident were frequent follow up of traditional and religious healers rather than attending modern health service; "majority of the complaints were practicing and visiting Holly- Water, sorcerer, and praying for "God" to treat the disease" (KII ≠ 3).

Theme 4: Health professional awareness

During the discussion with informants, community members reported that they are not confident enough by health professions because no clear and adequate explanation was given during their visit; "I was attending health service in different health institutions but not adequate explanation was given for me about the nature of disease that why I prefer to attend traditional religious service "(KII ≠ 2).

Theme 5: Psychosocial impacts of the illness

The incident was perceived as contagious communicable disease as a result the community was not reluctant to send their children to school. Similarly, students also not delighted to attend the school; "many students were in fear of the outbreak perceiving it as a communicable disease and they were frustrated to attend teaching learning process" (KII ≠ 2).

Table 2

Summary of themes and sub-themes for the occurrence of mass psychogenic illness in Haraza Elementary school, Tigray, Northern Ethiopia, 2019

Category	Themes	Orders /Sub-themes
School community members	Theme 1: On set of an episode	On set of illness occurred for the first time
		Incident occurred while students learning English
		Index case do not have an economic problem
		Index case was middle-level student
		No one told us the type of incident even health workers
Community members	Theme 2: Community perception about the incident	Such type of incident not occurred before in the locality
		Evil-force from new political reform in Ethiopia
		No one told us the type of incident including health professionals
		Such type of incident not occurred before in the locality
		No one told us the type of incident including health professionals
Health professionals	Theme 3: Treatment sought by the community	Unknown communicable disease
		blaming of unidentified teacher being as an evil-eye
		Frequent follow up of Holly- Water
		Visiting of sorcerer
		Praying for " God"
Community members	Theme 4 :Health professional awareness	Not confident to attend the health service
		The disease not known by health professionals
		We don't know the disease and not experienced before

Category	Themes	Orders /Sub-themes
		The disease was unspecified
		It was difficult for us to manage the incident
Health professionals	Theme 5:Psychosocial impacts of the illness	Discriminating complaints thinking being transmitted disease
Community members		School dropout
		Community frustration not sending students at school

Discussion

This was the first regional mass psychogenic incident. Based on this finding we can say the students were suffering from Mass Psychogenic Illness (MPI) for the following reasons: The incident was categorized as with no plausible organic cause of illness. Since, findings from clinical investigation of an episode were unspecified disease with psychiatric disorder, migraine head ache, and syncope. An important feature of migraine and syncope was their co-morbidity with mass psychogenic illness and other neurological diseases [23–26]. Similar incident was reported from South Africa, Malawi [27, 28] but unlike the current incident due to infectious disease was reported from the village of India, West Benga, and North Carolina [6, 30–31]. Besides, consumption of cake in Bangladesh noticed by 88% of ill students [23], socio-cultural beliefs like devil-evil forces and religious ritual evil force in Taiwan [24].

Similar to this study, various studies published between 1973 and 1993 showed that schools are very common place for mass psychogenic illness accounting more than 50% of the events [8]. This was similarly evidenced from [33–35], South Africa [36], and Ethiopia [8, 17]. Similarly, majority (82%) of the affected cases were females. This type of frequent attack of teenage females groups were reported from similar study settings [8, 17, 37]. Such outbreak lead a very rapid spread of symptoms which frequently includes chilling, fear, crying and shouting, laughing, anxiety, abdominal pain, communication difficulties, laughing, generalized weakness, muscle cramp and fainting which is consistent with other similar studies [8, 15–18].

Majority of the affected women were from Haraza kebele where the index case had lived. The duration of the outbreak stayed with an average of two day in which typically MPI affect the groups for limited time periods [8]. As to the causes of the illness, a majority were confused even health professionals. However, findings from qualitative study indicated that community perception about the cause of the illness Evil-devil force [9, 15–18], blaming being as an evil-eye [8], but the new political reform was uniquely identified cause in this study. Unlike the current study other outbreaks were attributed by environmental triggers [19, 27–29].

Prompt public awareness of an episode of mass psychogenic illness has been an important step found helpful to control its spread and re-emergence [38]. Among the crucial steps in managing MPI are: Among the crucial steps in managing MPI are; consider involving a behavioral scientist, psychologist or psychiatrist experienced in this area, try to minimize the persistence of rumors and media reports, which can trigger relapses of new cases, by giving out clear health messages [38–39].

Incorporating Mass Psychogenic Illness in health training package as one of continuous professional development enables health professionals with the necessary knowledge and skills to handle these kinds of outbreaks in the future [18]. We also recommend that including MPI in PHEM package at health facility level enables PHEM officers to be aware with such newly emerging outbreak and easily managing it. Advocacy workshops on this type of outbreaks for the community, media professionals, and other relevant stakeholders is also essential to avoid unrealistic and exaggerated rumors reports that increase community frustration .

Conclusion

Inadequate awareness and knowledge of the community, health professional and media professionals on the nature and characteristics MPI might result exaggerated rumors that lead community frustration and social disturbance which facilitate school dropout. Therefore, appropriate and timely strategies should be designed at regional level before many psychosocial impacts on the community.

Strength and limitation of the study

The strength of the study was involvement of mixed method study and laboratory investigations that increase the fidelity and validity of the study. Small sample size and not incorporating complaints perception about the episode since they were unable to communicate during data collection period might be limitation of the study.

Abbreviations

MPI: Mass psychogenic illness; PHEM: Public Health Emergency Management; KII: Key Informant Interview;

Declarations

Authors' contributions

KF and TW designed the study; KF and TW developed the protocol; KF conduct data analysis, interpretation, and preparing the first draft of the manuscript. All authors were involved in commenting, revising, and approving the final version of the manuscript

Competing interests

The authors declare that they have no competing interests

Availability of data and materials

The datasets used and/or analyzed for the study were available from the corresponding author on reasonable request.

Consent for publication

Not applicable, no individual detail is presented.

Ethics approval and consent to participate

The proposal was approved by the Health Bureau and Tigray Health Research Institute. All participants of the study were provided with an orally informed consent clearly stating the objectives of the study and their right to refuse to be part of this study. Participants were serviced with the necessary health services including laboratory investigation based on their interest.

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Figures

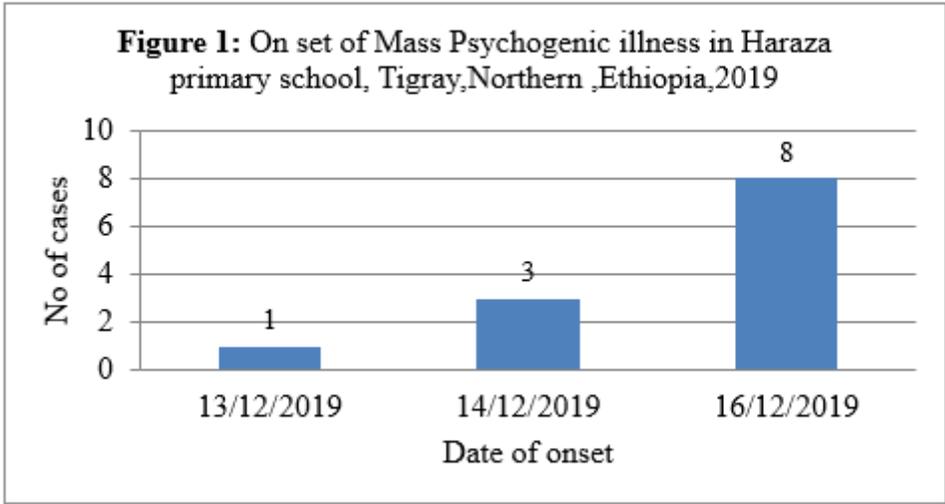


Figure 1

On set of Mass Psychogenic illness in Haraza primary school, Tigray, Northern Ethiopia, 2019

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