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Psychogenic epidemics and work

by Martti Olkinuora, MD¹

OLKINUORA M. Psychogenic epidemics and work. *Scand J Work Environ Health* 19 (1984) 501—504. Psychogenic epidemics cover various forms of collective behavior and include mass hysteria, mass psychogenic illness, and hysterical contagion for which no physical explanation can be found. The typical course of a psychogenic epidemic at a workplace progresses from sudden onset, often with dramatic symptoms, to a rapidly attained peak that draws much publicity and is followed by quick disappearance of the symptoms. Over 90 % of the affected persons are women, and the symptoms range from dizziness, vomiting, nausea, and fainting to epileptic-type seizures, hyperventilation, and skin disorders. The background mechanisms are thought to be generalized beliefs and triggering events which create a sense of threat that leads to a physiological state of arousal. This state, in turn, creates new beliefs which give meaning to the sense of arousal. The new belief spreads through sociometric channels. Predisposing factors include boredom, pressure to produce, physical stressors, poor labor-management relations, and impaired interpersonal communications, and lack of social support. It is important that a thorough investigation be carried out in all instances. Investigation is not only necessary for diagnosis, but it also reassures the management, the employees, and the press that physical factors are unlikely to be responsible for the disease.

Key terms: hysterical contagion, mass hysteria, mass psychogenic illness, work conditions.

In their study *The June Bug* Kerckhoff & Back (8) proposed that collective behavior comprises many different kinds of phenomena, eg, crowd behavior, panic, fads, and crazes. The common definition for such phenomena is the spontaneous response of a number of people who find themselves in a situation for which there is no common cultural definition of what is appropriate.

“Hysterical contagion,” “mass hysteria,” and “mass psychogenic illness” are synonyms for the form of collective behavior that consists of the dissemination of a set of symptoms for which no physical explanation can be found. Baker (1) has defined mass psychogenic illness as the collective occurrence of physical symptoms and beliefs about the origin of the symptoms among a group of persons in the absence of a plausible biological explanation.

Mass hysterical phenomena range from medieval dancing manias and children’s crusades to mass swoonings of young girls listening to popular singers. Another kind of psychogenic contagion is the phenomenon called *folie à deux* (or *folie à trois*), in which a mental illness is shared by two (or three) persons; a common delusional system is usually involved.

Field studies

Kerckhoff & Back’s study (8) may serve as a classical example of a psychogenic epidemic in a work setting. In June 1962 a mysterious illness broke out at a dress-making plant with 965 workers in a small southern town in the United States. Fifty-nine women and three men developed symptoms of nausea, skin rash, fainting, headache, and weakness. An insect that had supposedly arrived from England in a shipment of cloth was blamed for the outbreak of the sickness. However, the insect was never found. The epidemic occurred during the height of the production season and came and went rather quickly, lasting a week or less. It peaked rapidly and disappeared just as quickly. Almost all the affected persons were women, and almost all of them worked on the day shift. All but a very few cases were found in a functionally and spatially separate section of the plant. As Kerckhoff & Back observed, “Whatever ‘it’ was, it struck first-shift women in the dressmaking departments more consistently than anyone else. And most important of all, ‘it’ could not be explained in any ‘normal’ way [p 16].”

There are numerous other field studies of mass psychogenic epidemics in schools and work environments. Knight et al (9) described an epidemic hysteria in a Louisiana school in the United States where 22 subjects, all females except one, experienced hysterical attacks of epileptic-type seizures, catatonic posturing, dizziness, and hyperventilation. The main triggering factor was the threat of pregnancy tests. Colligan & Murphy (4) have reviewed other studies of school

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epidemics with various symptomatologies. The victims were mostly females, and the triggering factors included strange odor, the recent outbreak of polio within the community, and various rumors.

Stahl & Lebedun (14) described a case of mass hysteria at the data-processing center of a university where approximately 35 female workers were exposed to a “mysterious gas from an unknown source” that caused dizziness, vomiting, nausea, and fainting.

Psychogenic epidemics of skin disorders have also been reported (6, 10).

An investigation of a case of apparent mass psychogenic illness was undertaken in an electronics assembly plant in the United States (5). The plant employed 500 workers, 80 % of whom were women. The outbreak of illness involved a total of 90 female first-shift workers who reported a variety of non-specific symptoms such as headache, dizziness, and lightheadedness in response to a strange odor at the workplace. Similar symptoms were reported from an epidemic in a shoe factory where 50—75 workers became ill in response to a strange odor at the workplace (11). For descriptions of mass psychogenic illness in an aluminum furniture assembly plant and frozen fish packing plant, see Smith et al (13). Epidemic hysterias among factory workers in Singapore have been reported by Yoke et al (16) and Chan & Kee (2).

Mechanism of psychogenic epidemics

Colligan & Murphy (4) have summarized the psychosocial factors involved in the contagious outbreaks presented in the literature as follows: (i) environment (schools, work), (ii) boredom (sewing operations, assembly plants, data keypunch center), (iii) production pressure, (iv) physical stressors (noise, poor lighting, variations in temperature, fumes and odors), (v) labor-management relations, and (vi) lack of social support (communication). In many studies these stress factors were important prerequisites of a psychogenic epidemic, but they were not sufficient to explain why the epidemic broke out. Something more is needed.

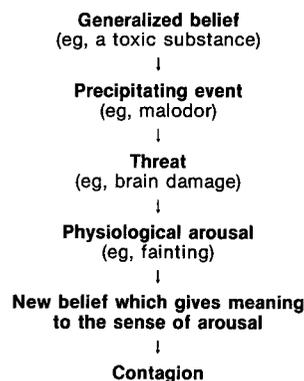
In their discussion on cases of hysterical contagion, Kerckhoff & Back (8) stated that “These occur in stressful situations in which there are channels of communication among those experiencing the stress. The hysterical contagion can develop, however, only if a hysterical *belief* is present (or evolves) and a precipitating *event* occurs to heighten the sense of immediate and tangible *threat* [p 28].”

Collective behavior is guided by various kinds of beliefs — beliefs based on assessments of the situation, wishes, expectations. These generalized forms are akin to magical beliefs (12). Such circumstances in the world of work can be, say, the belief that a certain chemical is toxic. A precipitating event is also needed. Should the belief exist before the provoca-

tion, only certain events can be interpreted as relevant to the belief and thus as representing the kind of threat the belief validates. Should the provocation occur first, however, there are almost unlimited possibilities for the development of a belief which gives the necessary meaning to the event (8).

The threat, whether “real” or “symbolic,” causes a physiological arousal state in which there are both psychological symptoms (eg, discomfort, tension, anxiety, fear, anger) and physiological changes (eg, palpitations, sweating, flushing, muscle tension, and “butterflies in the stomach”). In their most severe forms, such physiological responses can lead to fainting. According to Kerckhoff & Back, what is needed in hysterical contagion is the combination of a number of people who are aroused and a belief in a credible source of such discomfort. What leads to contagion is a new belief which gives meaning to the sense of arousal. One could also assume that, as the credibility of the new belief increases, relatively minor physiological cues would suffice to suggest a connection between one’s experience and the source of threat.

Kerckhoff & Back’s discussion can be modified as follows:



Why and how psychogenic contagion occurs is far from clear. Contagion means a spreading of affect or behavior from one group member to another, one person serving as the stimulus for the imitative act of another (4). It should be noted that the early victims — the so-called “triggers” — may have symptoms caused by physical or psychological factors or both. The trigger, who may have a physical ailment, then unleashes psychological distress in other workers (15).

There is evidence that the personal characteristics of trigger persons are important. As Kerckhoff & Back (8) concluded, not much excitement is created until the behavior pattern (and a “reasonable” explanation for it) spreads among those who are socially more central, whereafter the contagion is rather rapid and follows sociometric channels. Finally, as larger and larger numbers of persons exhibit the behavior, the sheer size of the affected category in-

creases the credibility of the phenomenon. Ultimately almost everyone believes in the “bug,” and cases begin to occur throughout the population. At that point, the pattern becomes a kind of “crowd response.”

Rather illustrative is Maguire’s (10) report about two separate outbreaks of skin disorders. In the first epidemic eight skilled women and two unskilled men in a small ceramics factory were affected. Seven of the affected women described how their own difficulties had begun after they had seen the red and swollen face of their colleague, the first victim, and heard her story. It was revealed that only this trigger person had a true (although not an occupational) dermatologic disorder. She was of the utmost importance in the evolution of the outbreak. There were hysterical overtones in her history, and she gave a vividly dramatic and verbose account. In the second epidemic, too, in which 17 employees had irritation of the skin or the eyes or both, the central figure was a female employee with an organic dermatologic disorder. In this case the affected female complained directly to a male colleague who also had an organic condition (chronic blepharitis). Assumptions and fears radiated from this central couple to others, whose skin maladies were close but not exact duplicates of those of the central figures.

According to Kerckhoff & Back’s postulates, the probability that a belief will be accepted increases along with (i) an increase in the intimacy of the person’s social relationships with those who believe, (ii) an increase in the number of persons known to have accepted it, (iii) an increase in the level of prestige of persons known to have accepted it, (iv) the degree of consistency between the belief and the established cultural definitions of the population of which the individual is a member, and (v) the extent to which the belief serves the needs of the person.

Personality and cultural factors

Study reports about the personality characteristics of affected workers are controversial and inconclusive. The most commonly used psychological instruments are the Minnesota Multiphasic Personality Inventory (MMPI), the Eysenck Personality Inventory (EPI), and Raven’s Standard Progressive Matrices.

In a study of a lawn furniture assembly plant with 48 female and 3 male workers, those affected scored higher on the hysteria subscale of the MMPI [unpublished report (1978) of Colligan, cited by Colligan & Murphy (4)]. A study in an electronics assembly plant where 90 female workers had been affected found that the nonaffected scored higher on the Eysenck extraversion scale than the affected. But, according to the MMPI, the affected were more depressed, and they scored higher on the hysteria scale of the MMPI than did the nonaffected (5).

An investigation in an aluminum furniture assembly plant where an illness involved 29 female workers, the affected scored higher on the hysteria scale of the MMPI, and in a frozen fish packing plant 33 affected women and 2 men scored higher on the extraversion dimension on the Eysenck scale (13).

In a report on high-risk factors of factory workers in Singapore, 22 affected women were compared with 505 nonaffected workers. The affected group had slightly higher neuroticism scores than the referents, higher extraversion scores, and lower intelligence scores according to the EPI and Raven’s Standard Progressive Matrices, but the differences were not statistically significant (16). Another Singaporean study used the same method on 108 affected workers (all but one female) and detected no significant differences in the mean extraversion, neuroticism, and intelligence scores between the affected persons and the referents (2). Instead there was a strong association between epidemic hysteria, ethnic group, and religion, the Malays having a significantly high attack rate (7.5 %) and the Chinese a significantly low rate (0.4 %). The Muslims had a significantly high rate (7.5 %), whereas the Buddhists and the persons who did not belong to any religious denomination had a significantly low rate (0.3 & 0.7 %, respectively). The authors concluded that hysterical behavior in females within the Malay community appears to be accepted and often attributed to evil spirits, but this “safety valve” mechanism may partly explain the relatively low mental disease and suicide rates of Malays in Singapore compared with those of the Indians and the Chinese.

Course and management of psychogenic epidemics

According to several studies psychogenic epidemics begin suddenly, often with dramatic symptoms that attract much publicity, and then they disappear as quickly as they came. The prognosis is usually good. It is important that a thorough investigation be carried out in all instances so as to be sure that, if *no cause is found*, all avenues have been explored. This thoroughness is not only necessary for the diagnosis, it also reassures the management, the employees, and the press of the fact that physical factors are unlikely to be responsible for the disease (15). After an epidemic psychogenic illness at an electronic component manufacturing plant in Pennsylvania in 1982, the National Institute for Occupational Safety and Health in the United States recommended that the workers be educated in the proper use of chemicals and informed about their odors and health effects, that the employees be allowed to tour the anechoic chamber to allay their fears of exposure to radiation or chemicals from this area, and that meetings be held with employees to help dispel misconceptions about the term “psycho-

genic illness.” In future outbreaks the Institute recommended that symptomatic persons be removed to a quiet room away from other employees. Unless trained medical personnel or life-saving equipment are needed, transportation for medical evaluation does not require an ambulance. If an ambulance must be called, the use of sirens and flashers should be avoided near the plant (17).

Discussion

Many elements are involved in the pathogenesis of psychogenic epidemics, eg, real or imaginary exposures, fears and rumors, imagination, publicity, suggestive factors, and conversive mechanisms. It must be pointed out that the presence of psychogenic mechanisms does not rule out physical or chemical factors, which may play an important role either in the triggering of the illness or in the persistence of the symptoms. As Faust & Brilliant (7) have argued, “mass hysteria” may be the result of interactions between low levels of toxicants and may not be the result of “hysterical” behavior at all. However, as Colligan & Murphy (4) stressed, contagious psychogenic illness is a *social* phenomenon that affects a certain proportion of a *normal* population under conditions of psychological and/or physical stress. Colligan (3) corrected the following misconceptions associated with mass psychogenic illness: (i) that the fact that an illness has a psychogenic component does not imply that the experienced symptoms are imaginary or illusory; (ii) that the term “psychogenic” should not be confused with “neurotic” or “psychopathologic;” (iii) that, in the case of psychogenic illness, the individual is more to blame, or more at fault, for the etiology of his illness than he would be in the case of biogenic or chemogenic illnesses [It is as absurd to blame the victim of an illness of psychogenic nature as it is to blame the coal miner for his pneumoconiosis.]; and (iv) that any illness may be (and probably is) the end result of a combination of interacting and preexistent conditions, and the distinction between the psychosocial and the physical origins is more illusory than real.

The symptoms experienced by victims of a psychogenic epidemic chiefly resemble a physical disease, eg, dizziness, nausea, vomiting, fainting, etc. In most cases the symptoms disappear when, after a thorough investigation, the employees are reassured that no

dangerous factors exist. Sometimes the use of “physical” language is the best cure. In Stahl & Lebedun’s (14) study of mass hysteria caused by a “mystery gas,” specialists explained that they thought an “atmospheric inversion” was the cause of their symptoms. The explanation reduced the high level of anxiety, and the explanation met its objective.

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