

Sudden Deaths Among Chinese Physicians

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INTRODUCTION

Sudden deaths are always an important topic, which catches physicians and health professionals' attention. Physicians and clinical scientists have reported their findings of unexpected deaths concerning about infants, children, young athletes, soldiers, adults with chronic diseases, and elderly people in thousands, if not millions of publications.^[1,2] However, there are no existing clinical reports about sudden deaths among physicians and medical staff. Recently, sudden deaths in Chinese physicians, anesthesiologists in particular, become the headlines in media and news. Chinese physicians are turning into the high-risk professionals of sudden death during the hospital duty hours. According to an official survey, there are a total of 984,926 medical institutions and more than 97 million physicians in China by the end of 2014, while the annual medical graduates and postgraduates amount nearly 600,000 (<http://yyh.dxy.cn/article/105034>). With the rapid growth of Chinese economy and the radical upheaval of expanding hospital size, sudden deaths in Chinese physicians become critical social issues and contemporary health problems, challenging medical education and hospital management. Hereby, we have investigated the issues and problems of sudden deaths in Chinese physicians for the purpose of self-alert, self-protection, and self-life-saving.

FINDINGS

In this study, we have carried out a systematic search of the medical databases and mass media between 1966 and April 2015. The databases included both English (Cochrane Library, MEDLINE, and PubMed) and Chinese (Chinese Biomedical Literature, CNKI and Wanfang). The media search included: (1) Search engine (Yahoo, Google, Bing

and Baidu); (2) digital media (BBC News, CNN News, China Daily, Phoenix New Media, NetEase, SOHU, and SINA); and (3) Medical Network Forum (dxy.com and medlive.com). So far no single article has ever been published in all the available databases. Eventually, there were 35 news reports highlighting sudden deaths among 29 physicians [Table 1]. All the 29 sudden deaths occurred over the period of 2008–2015. Key information was confirmed by interviews with the relevant hospital officials and victims' relatives.

Sudden deaths indeed happen among Chinese physicians of young adults (mean \pm standard deviation: 40 ± 9 years) and approximately 90% of them are male. Furthermore, mean age of sudden deaths is significantly younger ($P = 0.02$) in the 14 anesthesiologists (35 ± 6 years; 95% confidence interval [CI], 32–39) than other physicians (43 ± 9 years; 95% CI, 38–48). All the three female physicians of the sudden deaths are young anesthesiologists (age range, 26–42 years; median, 32 years).

The number of sudden deaths among Chinese physicians escalates between 2008 and 2015: Cases 1 in 2008, 0 in 2009, 2 in 2010, 0 in 2011, 3 in 2012, 3 in 2013, 15 in 2014, and already 5 in the first quarter of 2015. Nobody expects this upward trend to continue or to accelerate.

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Table 1: Demographic data of the Chinese physicians with sudden deaths

| Numbers | Age of death | Gender | Department | Tertiary Hospital | Date of death | Working place |
|---------|--------------|---------|-------------------|-------------------|---------------|-----------------|
| 1 - 1 | Unknown | Male | Anesthesiology | Yes | 09/04/2012 | Shanghai |
| 1 - 2 | 31 | Male | Anesthesiology | Yes | 11/16/2012 | Ningbo |
| 1 - 3 | 29 | Male | Anesthesiology | Yes | 07/04/2013 | Shanghai |
| 1 - 4 | Unknown | Unknown | Anesthesiology | No | 07/05/2013 | Sansui County |
| 1 - 5 | 32 | Male | Anesthesiology | Yes | 01/18/2014 | Fuyang |
| 1 - 6 | 34 | Male | Anesthesiology | Yes | 03/03/2014 | Beijing |
| 1 - 7 | 38 | Male | Anesthesiology | Yes | 03/19/2014 | Jiangyin |
| 1 - 8 | 47 | Male | Anesthesiology | Yes | 03/27/2014 | Shenyang |
| 1 - 9 | 42 | Female | Anesthesiology | Yes | 04/03/2014 | Baiyin |
| 1 - 10 | 40 | Male | Anesthesiology | Yes | 06/25//2014 | Quanzhou |
| 1 - 11 | 40 | Male | Anesthesiology | No | 10/24/2014 | Beijing |
| 1 - 12 | 36 | Male | Anesthesiology | Yes | 11/09/2014 | Jianhu County |
| 1 - 13 | 26 | Female | Anesthesiology | No | 03/03/2015 | Hangzhou |
| 1 - 14 | 32 | Female | Anesthesiology | Yes | 04/01/2015 | Anhua County |
| 2 - 1 | 44 | Male | Surgery | Yes | 11/18/2008 | Guangzhou |
| 2 - 2 | 55 | Male | Internal medicine | Yes | 12/24/2010 | Taipei |
| 2 - 3 | 41 | Male | Surgery | Yes | 12/24/2010 | Taipei |
| 2 - 4 | 35 | Male | Surgery | Yes | 11/14/2012 | Hefei |
| 2 - 5 | 49 | Male | Emergency | No | 11/17/2013 | Beijing |
| 2 - 6 | 32 | Male | Surgery | Yes | 01/18/2014 | Shanghai |
| 2 - 7 | 31 | Male | Surgery | Yes | 04/08/2014 | Fuzhou |
| 2 - 8 | 38 | Male | Surgery | Yes | 09/18/2014 | Pingyang County |
| 2 - 9 | 51 | Male | Surgery | Yes | 10/04/2014 | Dongying |
| 2 - 10 | 55 | Male | Surgery | No | 10/12/2014 | Beijing |
| 2 - 11 | 48 | Male | Surgery | Yes | 10/25/2014 | Beijing |
| 2 - 12 | 38 | Male | Surgery | No | 11/09/2014 | Nanjing |
| 2 - 13 | 55 | Male | Internal medicine | Yes | 01/27/2015 | Qidong |
| 2 - 14 | 50 | Male | Internal medicine | No | 02/21/2015 | Dengzhou |
| 2 - 15 | 28 | Unknown | Emergency | Yes | 03/02/2015 | Xi'an |

Among the 29 physicians, 14 are anesthesiologist, 10 surgeon, 3 doctors of internal medicine, and 2 of emergence medicine. Therefore, sudden deaths seem to strike specialists in surgery and operative care most.

According to China urban scale grades, we have classified the location of physicians' working hospitals into cities and county. Among the 29 cases, 25 (86%) occurred in cities and 4 in counties. Sudden deaths among the 29 physicians were highly prevalent at the tertiary hospitals, especially the affiliated hospital of medical college/university. On the other hand, a large number of the sudden deaths occurred in regions with high gross domestic product (GDP) levels, such as the Southeast coast with rapid economy development in China.

DISCUSSION

This is the first academic report of sudden deaths among physicians. All the physicians of sudden deaths, including that anesthesiologists and nonanesthesiologists are young Chinese adults. They are predominantly males and operative caregivers working in city hospitals with high GDP per capita. The average age of sudden deaths is much younger in the Chinese anesthesiologists than their nonanesthesiologists counterparts.

Working overload is the most serious problem, which each Chinese physician has to handle.^[3] It has been suggested

that nearly 90% physicians spent more than 8 hours per day on their work (<http://health.sohu.com/s2008/yisheng/htm>). Meanwhile, the large number of patients in China is also an alarming problem. In-patient beds are always a shortage of resource in tertiary hospitals. Approximately, 39% physicians often feel very tired and "burnout" due to lack of rest.

Additionally, a few Chinese physicians have been wounded, kidnapped, disabled, or even killed by mind-confused patients. Many patients often instinctively blame their physicians rather than taking a reasonable attitude to the disease when their conditions deteriorate.^[4] Meanwhile, they have illusive expectations of the therapeutic efficacy of current treatments. This illusion often outwit the harsh reality in hospital management such as pediatrics care.^[5] Given the fact that most of the Chinese families have only one child, parents and grandparents pay great attention to the feeling of their kids. Wealthy parents particularly demand higher-quality health services for their children.^[6] Physicians are usually stressful when facing the demands.

Young anesthesiologists normally grow into an independent specialist in the operative care, engaging in night shifts after several years of training and fellowship. In contrast, senior anesthesiologists just train the young and assign duties to

them. Few of senior anesthesiologists need to work, as hard as the young. However, clinicians and anesthesiologists are completely different. Young clinicians such as internists usually cannot treat patients independently, and they always manage patients under the guidance of their supervisors. This may explain why the average age of sudden deaths among the nonanesthesiologists is higher than the anesthesiologists.

Chinese physicians also have additional pressure of publishing papers.^[7] They need publications to get a promotion and obtain peer recognition. In China, patients satisfactions are demanding for physicians capability while physicians reputations largely dependent on their research outputs. Publication pressure, like the Sword of Damocles, hangs over Chinese physicians because evaluation system relies heavily on research output, high-impact papers in particular.^[7] This makes physicians become rather stressful. The higher grade their working hospitals are, the higher impacts their papers have to meet. Also, cities have high-grade hospitals compared with counties. Therefore, it is not surprising that risks of sudden deaths are aggregated in physicians working in tertiary hospitals in large cities. With unprecedented investments in research and development, China is second only to the USA in terms of scientific publication output in English, but research misconduct, such as fabrication, falsification, plagiarism, and unattributed ghost-writing threaten to overshadow China's achievements.^[7-9] The scientific research including medical research has lost its face, if not the soul.

PERSPECTIVE

The mechanism of sudden deaths among the Chinese physicians remains unclear. Many apparently healthy adults may be dying unexpectedly and suddenly. The majority of the report cases die from heart-related causes such as cardiac arrhythmia. In the sample cases reported in

Chinese news media, it can be very difficult to identify a precise cause of the sudden deaths. Sudden deaths among physicians are not rare, and this case series represents the tip of a larger iceberg. Hereby, we start ringing the 'alarm bells' to wake up health care professionals for the purpose of self-protection and self-life-saving. Our viewpoint may help us gain a greater understanding of the scale of the problem and find ways of preventing such tragedies from occurring in the future.

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Conflicts of interest

There are no conflicts of interest.

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