Physician Suicide in Taiwan, 2000–2008: Preliminary Findings

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Research regarding physician suicide in Taiwan is lacking. Using national physician insurance data from January 1, 2000 to April 30, 2008, the present study aimed to explore the association between physicians’ suicide and their characteristics, including age, sex, specialties, area of residence, hospital types, and suicide methods. The majority (53.1–70.6%) of suicide cases occurred among physicians in their 40s. More suicides were reported among physicians serving in the community, living in urban areas, and from specialties such as general practice, family practice, psychiatry, and surgery. The leading suicide methods were hanging/suffocation, drowning, jumping from heights, charcoal burning and drug poisoning. In conclusion, physicians committing suicide were likely to be in their 40s, to serve in the community and to live in urban areas. Future efforts should focus on exploring the causes and possible interventions for physician suicide. [J Formos Med Assoc 2009;108(4):328–332]

Key Words: cause of death, community, occupation, physician, suicide

Physicians are generally considered to have a high rate of suicide.1,2 A meta-analysis combining 25 studies suggests that the suicide rate among male doctors is 40% higher than that among men in general, whereas the suicide rate among female doctors is 130% higher than that among women in general.3 The causes of the higher suicide rates for physicians are suspected to be profession-related stresses and emotional problems. Physicians are more susceptible to psychiatric illnesses caused by adverse life events which, in turn, are evidently an important risk factor for suicide.4 Physicians’ easy access to lethal means (e.g. drugs) and their medical knowledge make them more likely to choose effective suicide methods.2 Despite the fact that primary physician education is considered one of the most effective strategies for suicide prevention, whether physicians themselves need special help when they are at risk for suicide, and what kind of interventions would be effective remain undetermined.

Information regarding physician suicide in Taiwan is lacking. During the past decade, suicide rates in the general population in Taiwan have increased by > 150%.5 However, whether physician suicide has followed the same trend is unknown. In the meantime, the career environment for physicians has undergone a big change since the inception of national health insurance in Taiwan in 1995. Changes in both the payment system and patient–doctor relationships have had an enormous impact on the whole medical profession. There are more demands and expectations from patients, while the rewards may have decreased. Under such circumstances, it is understandable to assume an increase in suicide rate...
among physicians if there is an increase in perceived stresses or psychiatric illnesses. Given that physicians of different cohorts may experience the above scenario with different subjective perceptions, it is of great importance to explore physicians’ suicide by their distinct characteristics.

The current study was a pilot study that addressed physician suicide in Taiwan, based on a national insurance dataset designed to cover all practicing physicians. To further explore potential risk factors as well as prevention strategies, we examined the demographic characteristics, specialties, area of residence, hospital types, and methods of suicide of physician suicide cases.

**Methods**

Since January 1, 2000, all members of the Taiwan Medical Association have participated in a physician insurance program that covers all practicing physicians in Taiwan. Once a physician dies, the cause of death as listed on the death certificate is recorded for the purpose of an insurance claim. These records of causes of death from January 1, 2000 to April 30, 2008 were provided by the Taiwan Medical Association. The causes of death were screened by board-certified psychiatrists for unnatural deaths. First, deaths with specific causes other than suicide were excluded. Deaths with unknown or unspecified causes, e.g. “cardiopulmonary failure”, “central nervous system failure”, or “death by old age” (for a middle-aged physician) were categorized as unspecified deaths and analyzed separately. Then, the remaining cases were screened for definite and probable suicides. Definite cases are defined as undoubted deaths by suicide, e.g. “death by CO poisoning, charcoal burning”. Probable cases are defined as deaths highly suspicious of suicide, e.g. “death by suffocation, falling into water before death”, or “death by suffocation, airway compression”.

The descriptive characteristics of these definite and probable cases were analyzed by age, sex, area of residence, specialties, suicide methods, and hospital types. Suicide methods were classified according to ICD-9 codes of liquid/solid poisoning (E950), domestic gas poisoning (E951), charcoal burning and other gases (E952), hanging (E953), drowning (E954), cutting/piercing (E956), jumping from high places (E957) and others (E955, E958, E959). The analysis was first performed among definite cases only. Then, it was performed combining definite and probable cases. A separate analysis for unspecified causes of death was also performed. In addition, suicide rates for practicing physicians in Taiwan over these years were estimated by a range between low (estimated based on only definite and probable suicide cases) and high (estimated based on definite, probable cases and unspecified deaths) levels.

**Results**

There were 1011 deaths with recorded causes in the physician insurance register from January 1, 2000 to April 30, 2008. Among the 1011 deaths, 971 occurred during the years 2000 to 2007, while the total number of deaths among practicing physicians in Taiwan during the same period was 981. Hence, this insurance dataset covered 93.5% (971/981) of total physician deaths during this period. Among the 1011 deaths, 108 were from an unspecified cause (suicide could not be completely ruled out), i.e. cardiopulmonary failure (n = 69, 63.9%), cardiac failure (n = 22, 20.4%), unknown causes (n = 9, 8.3%), hypoxic encephalopathy (n = 3, 2.8%), central nervous system failure (n = 2, 1.9%), hypovolemic shock (n = 2, 1.9%), and old age (n = 1, 0.9%; this case died at age 56 years).

There were 17 definite and 15 probable suicides. Among the 17 definite cases (age range, 28–64 years), 16 were male. Twelve (70.6%) of these definite cases died in their 40s and another two (11.8%) were aged 51–64 years at the time of death. Only three (17.6%) were aged ≤ 40 years old at the time of death (Table 1). The most often used suicide methods were hanging/suffocation (n = 5, 29.4%), charcoal burning (n = 5, 29.4%) and drug poisoning (n = 4, 23.5%) among definite suicide
Analyses combining definite and probable cases \( (n = 32; \text{age range, 28–83 years}) \) revealed that 53.1\% \( (n = 17) \) of suicide deaths occurred in their 40s, and overall, 71.8\% \( (n = 23) \) occurred among mature physicians aged 41–64 years. Only 18.8\% \( (n = 6) \) were aged \( \leq 40 \) years old and 9.4\% \( (n = 3) \) were aged 65–83 years old. The analysis for suicide methods among combining definite and probable cases reveals that hanging/suffocation \( (n = 9, 28.1\%) \), drowning \( (n = 6, 18.8\%) \) and jumping from heights \( (n = 6, 18.8\%) \) were the leading suicide methods.

Of the 32 definite and probable cases, 31 were male. Eleven cases (34.4\%) were reported in Taipei City/County, three (9.4\%) in Kaohsiung City/County, two (6.3\%) in Taoyuan, Hsintsu, Miaoli area, eight (25\%) in Taichung, Changhua, Nantou area, seven (21.9\%) in Yunlin, Chiai, Tainan area, and one (3.1\%) in Hualien, Taitong area. As to hospital types, 19 physicians (59.4\%) were serving in community clinics/district hospitals, five (15.6\%) in regional hospitals, five (15.6\%) in medical centers, and three (9.4\%) were not working at the time of death (Table 2). The leading specialties were general practice \( (n = 6, 18.8\%) \), followed by family practice \( (n = 5, 15.6\%) \), psychiatry \( (n = 3, 9.4\%) \), and surgery \( (n = 3, 9.4\%) \).

The number of practicing physicians in Taiwan was 29,134 at the end of 2000 and increased continually to 35,992 by the end of 2007. According to the methods we used to estimate the range of suicide rates among practicing physicians in Taiwan, the lower level (estimated from definite and probable cases) was 5.88–21.19 per 100,000 and the higher level (estimated from definite and probable cases, as well as unspecified deaths) was 25.01–76.08 per 100,000, from 2000 to 2007.

### Discussion

The present study was a preliminary trial that addressed physician suicide in Taiwan. In this study, physicians committing suicide were likely to be in their 40s, to serve in the community, and to live

### Table 1. Age distributions for definite suicide cases, definite and probable suicide cases, and cases of unspecified causes of death*†

<table>
<thead>
<tr>
<th>Age (yr)</th>
<th>Definite suicide cases ( (n = 17) )</th>
<th>Definite and probable suicide cases ( (n = 32) )</th>
<th>Cases of unspecified causes ( (n = 108) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \leq 30 )</td>
<td>1 (5.9)</td>
<td>1 (3.1)</td>
<td>2 (1.9)</td>
</tr>
<tr>
<td>31–40</td>
<td>2 (11.8)</td>
<td>5 (15.6)</td>
<td>2 (1.9)</td>
</tr>
<tr>
<td>41–50</td>
<td>12 (70.6)</td>
<td>17 (53.1)</td>
<td>8 (7.4)</td>
</tr>
<tr>
<td>51–60</td>
<td>0 (0)</td>
<td>2 (6.3)</td>
<td>13 (12.0)</td>
</tr>
<tr>
<td>61–70</td>
<td>2 (11.8)</td>
<td>4 (12.5)</td>
<td>13 (12.0)</td>
</tr>
<tr>
<td>71–80</td>
<td>0 (0)</td>
<td>2 (6.3)</td>
<td>39 (36.1)</td>
</tr>
<tr>
<td>( \geq 81 )</td>
<td>0 (0)</td>
<td>1 (3.1)</td>
<td>31 (28.7)</td>
</tr>
</tbody>
</table>

*Data provided by Taiwan Medical Association; †data presented as \( n \) (%).

### Table 2. Distributions of hospital types for definite suicide cases, definite and probable suicide cases, and cases of unspecified causes of death*†

<table>
<thead>
<tr>
<th>Hospital type</th>
<th>Definite suicide cases ( (n = 17) )</th>
<th>Definite and probable suicide cases ( (n = 32) )</th>
<th>Cases of unspecified causes ( (n = 108) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinics/district hospitals</td>
<td>9 (52.9)</td>
<td>19 (59.4)</td>
<td>69 (63.9)</td>
</tr>
<tr>
<td>Regional hospitals</td>
<td>2 (11.8)</td>
<td>5 (15.6)</td>
<td>3 (2.8)</td>
</tr>
<tr>
<td>Medical centers</td>
<td>5 (29.4)</td>
<td>5 (15.6)</td>
<td>5 (4.6)</td>
</tr>
<tr>
<td>Not practicing</td>
<td>1 (5.9)</td>
<td>3 (9.4)</td>
<td>31 (28.7)</td>
</tr>
</tbody>
</table>

*Data provided by Taiwan Medical Association; †data presented as \( n \) (%).
in urban areas. Several limitations should be kept in mind when interpreting our results. First, the real causes of death may not be known or recorded clearly by the physicians in charge of the death certificate. The level of suicide may have been underestimated because of the stigma that surrounds suicide, which could possibly lead to some suicide deaths being listed as otherwise on the death certificate. There may also have been a selection bias; although 93.5% of the total physician deaths were covered by this insurance dataset, we cannot be sure whether the cases included in the dataset are different from those not included with regard to the causes of death.

Despite the above limitations, it is alarming that the majority of suicides occurred in physicians in their 40s. In 2007, physicians aged 41–50 years comprised 29.6% of the total number of practicing physicians in Taiwan, but in the current sample, they accounted for more than half (53.1–70.6%) of suicides (Table 1). Medicine as an occupation has its own developmental stages, which usually starts with residency training during a physician's late 20s. Following a relatively long period of hard work, physicians reach their 40s, and they may then feel less able to change their life direction if they are suffering from depression. Psychiatric illnesses can play a major role in physician suicide at this age, considering that the mean age of onset for major depressive disorder is around 40 years. Early detection and treatment of depression should thus be emphasized to reduce suicide among physicians.

The current study claims that middle-aged physicians have the greatest odds of dying by suicide, which is contradictory to prior results from Western countries that suggest that suicide rates increase with age among male physicians.\(^6\)\(^,\)\(^7\) It also differs from the general population in Taiwan, in which elderly persons aged \(\geq 65\) years have the highest suicide rates, followed by those aged 45–64, 25–44 and 15–24.\(^5\) Such a discrepancy may be explained partly by the cohort effects, since physicians in different cohorts were trained and practiced medicine in rather different environments because of the shift of sovereignty and change in health care systems over the past decades in Taiwan. This phenomenon can also be explained by the higher proportion of unspecified deaths among older physicians (Table 1); more suicides may be disguised among older physicians compared to their younger counterparts. Furthermore, the age distribution of members of this occupation-based insurance is different from that of the general population, since elderly physicians may give up membership when they stop practicing medicine. It is possible that estimation of suicides based on the current dataset was more biased for elderly physicians than that for those of other ages.

Another important finding of the current study is the predominance of physician suicide among those serving in the community. Around one third of physicians serve at community clinics/hospitals in Taiwan.\(^8\) Those physicians, nevertheless, account for more than half of the suicides in the current sample. It therefore raises an important issue as to why these physicians are more likely to commit suicide than those based in regional or center-level hospitals. While it is not reasonable to assume different distributions of psychiatric illnesses based on hospital types, physicians serving in the community may differ from others in terms of supportive systems. Without connections with colleagues and collective resources, those physicians might have to deal with every difficulty on their own. Also, they may be the very population most affected by the changes in the national health insurance system in recent years.\(^9\)\(^,\)\(^10\) In this regard, building up connections and providing mutual help among physicians in the community is essential for enhancing wellbeing and reducing suicide among physicians.

The leading specialties of physicians who committed suicide in the current study were general practice, family practice, psychiatry and surgery. However, this result may not be robust because of the small sample size and lack of information regarding certain subspecialties, e.g. those of surgeons and internists. Future research addressing physician suicide by specialties should also take into consideration the total number of physicians in each specialty.
The most frequently used suicide methods for physicians were hanging (suffocation), jumping from heights, drowning, charcoal burning, and drug poisoning. Relying on death certificates, it is difficult to distinguish suicides from accidents when the cause of death is drowning or jumping from heights. On the other hand, the drastic consequences of drug poisoning, hanging, or charcoal burning can be listed as due to an unspecified cause, such as cardiopulmonary failure, central nervous system failure, suffocation, or hypoxic encephalopathy. As to area of residence, more suicides were reported from urban than rural areas in the current sample, which is not likely to be fully attributed to the urban/rural differences in reporting suicide or unspecified causes, but rather may reflect the difference in physician distribution in Taiwan, given that there are more practicing physicians in urban areas.  

Considering the inherent limitations of the current study, it is difficult to precisely estimate suicide rates for physicians in Taiwan. The estimated ranges of suicide rates for physicians are wide and include suicide rates for the general population, hence preventing a reliable comparison between suicide rates of physicians and those of the general population over the study years. Also, differences in physician suicide by sex cannot be estimated because only one suicide by a female physician was identified in our sample. Although the proportion of practicing female physicians has increased continually from 10.5% in 2000 to 14.2% in 2007, most (68.4%) female physicians in Taiwan were ≤ 40 years old in 2007. Hence, a cohort effect may have had a greater impact on the estimation of suicide among female physicians in our dataset.

In conclusion, the current study suggests that physicians who commit suicide are likely to be in their 40s, to serve in the community, and to live in urban areas. Future efforts at identifying specific risk factors for physician suicide, e.g. major depressive disorder, as well as standardization of the writing-up of death certificates are warranted. In addition, strategies that focus on enhancing profession-related supportive systems as well as encouraging help-seeking behavior among physicians are crucial.

Acknowledgments

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