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Males with low income and catastrophic illnesses are important risk factors for in-hospital homicide-related deaths in Taiwan from 1998 to 2015

A cross-sectional study

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Abstract

This study aimed to investigate not only the differences in in-hospital deaths between male and female homicides in Taiwan from 1998 to 2015, but also the epidemiological characteristics and long-term trend analysis.

We collected data on 76,125 hospitalized patients injured in attempted homicides from January 1, 1998, to December 31, 2015, from the National Health Insurance Research Database (NHIRD), identifying 59,161 male and 16,694 female patients. Age, gender, and index date match. Multiple logistic regression was used to analyze the risks of gender differences in terms of homicide.

The death risk of male patients was 1.673 times that of female patients and the mortality risk of low-income male patients was 3.447 times greater than that of non–low-income male patients. Moreover, the in-hospital death risk was 23.584 and 5.064 times higher for male and female patients with catastrophic illness, respectively, compared to patients with noncritical diseases. There is a higher trend of male than female patients hospitalized after an attempted homicide.

Gender differences are significantly related to homicide, with males having a higher risk of death risk from homicide than females, especially in terms of low-income and catastrophic illness.

Abbreviation: 95% CI = 95% confidence interval, ANOVA = analysis of variance, AOR = adjusted odds ratio, CCI = Charlson Comorbidity Index, HWDC = Health and Welfare Data Science Center, MOHW = the Ministry of Health and Welfare, NHIRD = National Health Insurance Research Database, WHO = World Health Organization.

Keywords: epidemiology, gender difference, homicide, long-term trend analysis

1. Introduction

Homicide is a major public health concern. The World Health Organization (WHO) defines "homicide" as the intention to cause the death of another person in any way; it does not include deaths caused by suicide or war due to legal intervention.[1] The forms of homicide include child abuse, youth violence, intimate partner violence, sexual violence, and elder abuse.[2]

According to data from WHO, in 2015, an estimated 470,000 people in the world were victims of homicide. The homicide rate was 6.4 persons/100,000. In recent decades, the prevention of

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Informed consent was obtained from all subjects or, if subjects are under 18, from a parent and/or legal guardian.

Data are available from the National Health Insurance Research Database (NHIRD) published by the Taiwan National Health Insurance (NHI) Administration. Due to legal restrictions imposed by the government of Taiwan concerning the "Personal Information Protection Act," data cannot be made publicly available. Requests for data can be sent as a formal proposal to the NHIRD (http://www.mohw.gov.tw). No additional data available.

This study was approved by the Institutional Review Board of Tri-Service General Hospital at the National Defense Medical Center in Taipei, Taiwan (TSGH IRB No. B-109-39). All methods were carried out in accordance with relevant guidelines and regulations.

Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

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homicide has become an important task for international sustainable development.[2] According to the Global Burden of Disease Study, >400,000 people died from homicides in 2017. This is approximately 3 times the total number of deaths from armed conflict and terrorism.[2] Homicide is the main cause of death among adults between the ages of 15 and 49. In Latin America, the number of young people who die of homicides is twice that of those who die in traffic accidents and, in Honduras, the numbed is 4 times higher.[3] The homicide rate in high-income countries is usually lower than that in low- and middle-income countries. About 80% of homicides occur among men, with the highest incidence occurring among men aged between 15 and 29.[4]

In the research literature on homicide, gender usually receives much less attention than other demographic characteristics, such as the age and race of the victims and offenders.[5] To some extent, this is understandable, because, in the United States, almost three-quarters of homicide cases involve one male killing another male; therefore, homicides largely reflects male homicides.[5] However, there are huge differences in the trends and patterns between male and female homicide perpetrators and victims, which need to be elaborated.[5]

In the homicide case, the situation of the victims of female intimate partner homicide cases are twice that of the overall homicide case; in addition, men and women are equally perpetrators and victims of intimate partner homicides.[6] However, early homicide research has scarcely explored the impact of gender differences. At present, longitudinal observational research on the relationship between gender and homicide is limited, and there is a lack of understanding of gender differences and homicide. To overcome prior research limitations such as the samples being too small, the tracking time being inadequate, and the gender patters of homicide not being discussed), we assume that there are gender differences in homicides. We use the Taiwan National Health Insurance Research Database (NHIRD) to study inpatients injured in attempted homicides from 1998 to 2015 as a long-term follow-up study to analyze the epidemiological characteristics and trends of different genders in relation to homicide.

2. Materials and methods

2.1. Data sources

Taiwan's universal health insurance system was implemented in 1995 and currently covers 99% of all Taiwanese citizens. The Data Science Center of the Ministry of Health and Welfare (HWDC, MOHW) records all emergency room and hospitalization data. In addition, the law requires medical institutions to submit monthly declaration files for emergency room and hospitalization expenses. Therefore, the HWDC of the MOHW is the most authoritative data source for medical care-related research.[7] This study employs a cross-sectional study design using inpatient medical declaration files collected from 1998 to 2015. All research procedures involving human participants comply with the ethical standards of the institution and/or the National Research Council, as well as with the 1964 Declaration of Helsinki and its subsequent amendments or similar ethical standards. We used secondary data without any personally identifiable information, and the Tri-Service General Hospital Ethical Review Board (TSGHIRB 1-105-05-142) approved this study, waiving the requirement for individual written informed consent. The research flow chart is shown in Figure 1.

2.2. Variable definition

Variables include gender (male and female), age (1–4, 5–14, 15–24, 25–44, 45–64, and over 65 years old), Charlson

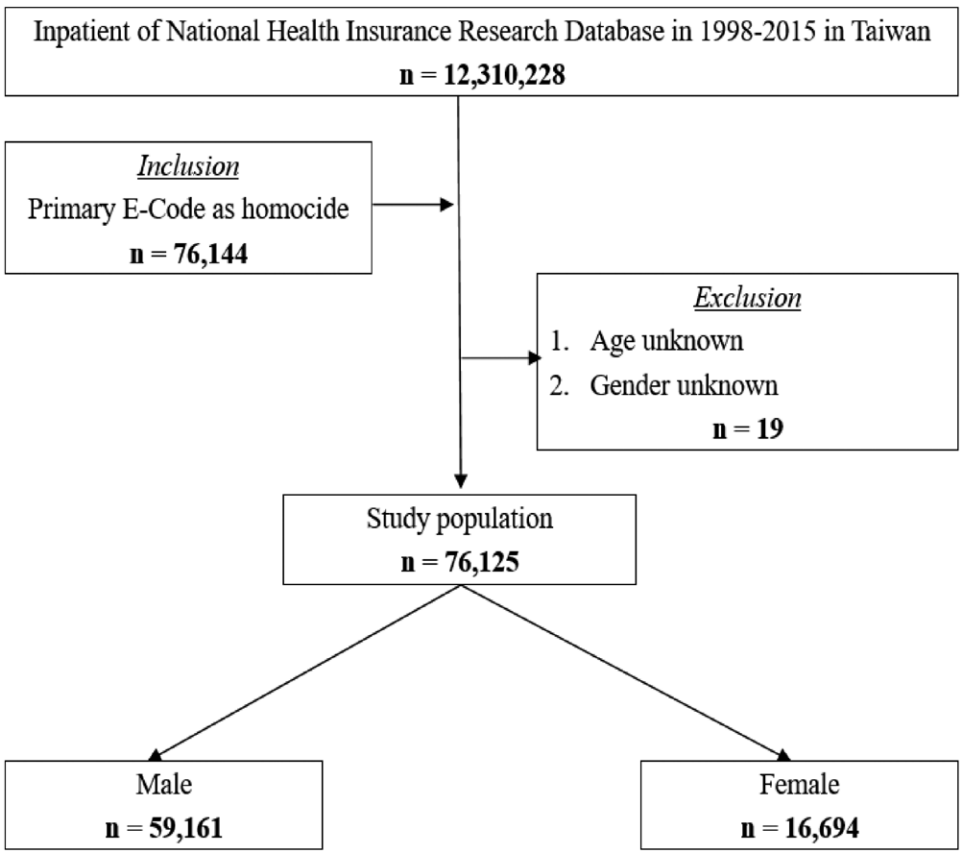

Figure 1. Research flow chart.

Table 1

Gender differences among hospitalized patients of attempted homicides.

	Males		Females		
Gender	***n***	**%**	***n***	**%**	***P*-Value**
Overall	59,161	77.72	16,964	22.28	
Age (mean ± SD, yrs.)	34.44 ± 15.03		38.97 ± 15.60		<.001
Age group (yrs)					<.001
<5	389	0.66	283	1.67	
5–14	1779	3.01	447	2.63	
15–24	16,536	27.95	2275	13.41	
25–44	25,860	43.71	8,102	47.76	
45–64	11,317	19.13	4,339	25.58	
≧65	3280	5.54	1518	8.95	
Methods					<.001
Fights/brawls/rape	29,509	49.88	8136	47.96	.002
Corrosive or caustic substance	42	0.07	31	0.18	.892
Poisoning	275	0.46	195	1.15	.392
Hanging	469	0.79	45	0.27	.698
Drowning	21	0.04	24	0.14	.913
Firearms	9	0.02	16	0.09	.947
Cutting and piercing	8728	14.75	1556	9.17	<.001
Abuse	1663	2.81	1740	10.26	<.001
Others	17,822	30.12	5026	29.63	.503
Late effect	623	1.05	195	1.15	.824
Low income					.042
Without	58,146	98.28	16,637	98.07	
With	1015	1.72	327	1.93	
Catastrophic illness					.881
Without	58,305	98.55	16,725	98.59	
With	856	1.45	239	1.41	
Psychiatric history					<.001
Without	57,612	97.38	16,230	95.67	
With	1549	2.62	734	4.33	
CCI_R	0.07 ± 0.36		0.06 ± 0.34		.482
Season					.003
Spring	14,387	24.32	4260	25.11	
Summer	14,732	24.90	4203	24.78	
Autumn	19,054	32.21	4278	25.22	
Winter	10,988	18.57	4223	24.89	
Location					<.001
Northern Taiwan	18,693	31.60	4280	25.23	
Central Taiwan	20,349	34.40	5923	34.92	
Southern Taiwan	15,197	25.69	5106	30.10	
Eastern Taiwan	4823	8.15	1633	9.63	
Outer islands	99	0.17	22	0.13	
Urbanization level					<.001
High	14,356	24.27	3854	22.72	
Medium	26,276	44.41	7102	41.87	
Low	18,529	31.32	6008	35.42	
Level of care					<.001
Medical center	10,723	18.13	2329	13.73	
Regional hospital	21,765	36.79	7106	41.89	
Local hospital	26,673	45.09	7529	44.38	
Division					<.001
Psychiatry	328	0.55	161	0.95	
Internal medicine	841	1.42	490	2.89	
Surgery	41,548	70.23	12,265	72.30	
Gynecology	0	0.00	98	0.58	
Pediatrics	350	0.59	240	1.41	
Others	16,094	27.20	3710	21.87	
Operation					<.001
Yes	35,676	60.30	12,857	75.79	
No	23,485	39.70	4107	24.21	
Psychiatric consultation					<.001
Yes	58,590	99.03	16,656	98.18	
No	571	0.97	308	1.82	
Length of stay (d)	4.98 ± 5.13		4.53 ± 6.16		<.001
Medical cost (NT$)	26,260.66 ± 45,462.43		19,048.64 ± 36,367.62		<.001
Prognosis					.003
Survival	58,716	99.25	16,875	99.48	
Mortality	445	0.75	89	0.52	

Chi-square/Fisher exact test on categorical variables and t-test on continuous variables.

CCI = Charlson Comorbidity Index.

Comorbidity Index (CCI), cause of homicide (ICD-9-CM E-Code: E960-E979 homicide), low income (yes, no), catastrophic illness (yes, no), requiring operation (yes, no), history of mental illness (yes, no)), hospital-level (medical center, regional hospital, local hospital), degree of urbanization (high, medium, low), season (spring, summer, autumn, winter), medical department (internal medicine, surgery, gynecology, pediatrics, other subjects), length of stay (days), medical expenses (NT$), and prognosis (survival rate, mortality rate). CCI selects the patient diagnosis code (ICD-9-CM N-Code), weights it according to the scoring criteria defined by Charlson, and calculates the total score. A higher score indicates more complications or a more serious diagnosis. In addition, the "prognosis" of the injured includes death in the hospital or voluntary discharge of terminally ill patients. A catastrophic illness is a severe illness requiring prolonged hospitalization or recovery. Examples include cancer, leukemia, heart attack, or stroke.[8] These illnesses usually involve high hospital, doctor, and medical costs and may incapacitate the person from working, creating financial hardship. Such illnesses are the type intended to be covered by high-deductible health plans. Research indicates that the unusual economic environment of the delivery of catastrophic illness care encourages the use of innovative therapies.[9] Medicare contains a benefit for catastrophic illness.[10] The low-income qualification was stipulated by Article 4 of the Public Assistance Act of Taiwan with the following conditions: (1) individuals must submit an application and be approved by their local municipal authority, (2) the average monthly income per person in the household must fall below the poverty line, and (3) the total household assets must not exceed the specific amount set by the central and municipal authorities in the year the application is submitted. The poverty line is based on the standard published by the Central Department of Budget, Accounting, and Statistics; it is defined by the central and municipal authorities as 60% of the median personal expenditure amount in the household's local area in the past year.[11] As of June 2020, there were 143,453 low-income households with 296,785 people in various counties and cities in Taiwan and 109,140 low- and middle-income households with 311,669 people, amounting to 252,593 households and 608,454 people in total, suggesting a coverage rate of 2.58% of the national population.[12]

2.3. Statistical analysis

This study assumes that descriptive statistics are presented in the form of percentages, averages, and standard deviations. Chi-squared test, Fisher exact test, Student t-test, and one-way analysis of variance (ANOVA) were used to assess the categorical and continuous variables between men and women. After adjusting for age, gender, comorbidities, CCI, season, location, degree of urbanization, and level of care, a conditional logistic regression analysis was performed to evaluate the impact of gender differences on the risk of in-hospital deaths among victims of attempted homicides. SPSS 22 version (IBM, Armonk, NY) was used for data analysis. A P value of <.05 was considered to be statistically significant.

3. Results

We collected data on 76,125 hospitalized patients of attempted homicides in Taiwan from 1998 to 2015. Table 1 shows their basic characteristics. There were 59,161 males (77.72%) and 16,964 females (22.28%), whose average ages were 34.44 ± 15.03 years and 38.97 ± 15.60 years, respectively. Male (43.71%) and female (47.76%) patients of attempted homicides had the highest rate of hospitalization between the ages of 25 and 44 years. The most common injuries from attempted homicides were from fights/brawls/rape, with the highest hospitalization rate being 49.88% for males and 47.96% for females. Non–low-income hospitals were found to have the highest rate of hospitalization, with the highest rate for male and female patients being 98.28% and 98.07%, respectively. Noncritical diseases had the highest rate of hospitalization, being 98.55% and 98.59% for male and female patients, respectively. The in-hospitalization mortality rates of victims of attempted homicides are depicted in (Table A1) and show a decreasing Multivariate logistic regression was used to analyze the prognosis of in-hospital death risk. As shown in Table 2, the death risk of male patients was 1.673 times that of female patients (adjusted odds ratio [AOR] = 1.673, 95% confidence interval [CI] = 1.309–2.140). The in-hospital death risk of men who used firearms was 100.355 times greater than that of patients who were involved in fights/brawls or those who were raped (AOR = 100.355, 95% CI = 23.20–434.0). The in-hospital death risk of women who used firearms was 128.383 times greater than that of patients who were involved in fights/brawls or those who were raped (AOR = 128.383, 95% CI = 35.39–465.7). The risk of death from an attempted homicide among hospitalized male patients with low income was 3.447 times greater than that of non–low-income male patients (AOR = 3.447, 95% CI = 2.122–5.601). The risk of death from catastrophic illnesses for male patients hospitalized after attempted homicides was 23.584 times greater than that for male patients with noncatastrophic illnesses (AOR = 23.584, 95% CI = 17.20–32.32). Similarly, the risk of death for female patients with catastrophic illnesses after attempted homicides was 5.064 times greater than that of females with noncatastrophic illnesses (AOR = 5.064, 95% CI = 1.871–13.70). For every 1-point increase in the CCI score of male patients who escaped homicide, the risk of subsequent hospital death increased by 12.5%.

Table A1

Mortality rates for hospitalized patients of attempted homicides.

Year	Mid-year population	Deaths	Mortality rate (per 10^5)
1998	21,835,703	382	1.75
1999	22,010,489	320	1.45
2000	22,184,529	327	1.47
2001	22,341,120	306	1.37
2002	22,463,172	297	1.32
2003	22,562,663	271	1.20
2004	22,646,836	259	1.14
2005	22,729,753	262	1.15
2006	22,823,455	228	1.00
2007	22,917,444	120	0.52
2008	22,997,696	191	0.83
2009	23,078,402	181	0.78
2010	23,140,948	179	0.77
2011	23,193,518	117	0.50
2012	23,270,367	179	0.77
2013	23,344,670	168	0.72
2014	23,403,635	178	0.76
2015	23,462,914	192	0.82

Table 3 and Figure 2 show the trend of hospitalization rates among victims of attempted homicide in Taiwan from 1998 to 2015. Male hospitalized patients were 3239 (28.81/10^5) in 1998 and 3976 (33.95/10^5) in 2015, initially rising, then falling, and then rising again to reach significance. In 1998, the number of female hospitalized patients was 1042 (9.75/10^5); in 2015, it was 1162 (9.86/10^5), which also showed a trend of rising first, then falling, and then rising again before reaching significance.

4. Discussion

The results of this study reveal that from 1998 to 2015 in Taiwan, the most hospitalizations related to attempted homicides occurred primarily among males. Those involved in fights/brawls/rape had higher hospitalization rates than did females

Table 2

Factors determining homicide prognosis by using multivariable logistic regression.

		Total	
Variables	**Adjusted OR**	**95% CI**	***P* Value**
Gender			
Male	1.673	1.309 -2.140	<0.001
Female	Reference		

Model	**Male**			**Female**		
Variables	**Adjusted OR**	**95% CI**	***P* Vaue**	**Adjusted OR**	**95% CI**	***P* Value**
Age group (yrs)						
<5	Reference			Reference		
5–14	0.118	0.044–0.317	<.001	0.192	0.045–0.823	.026
15–24	0.185	0.084–0.411	<.001	0.036	0.006–0.216	<.001
25–44	0.269	0.123–0.587	.001	0.184	0.056–0.601	.005
45–64	0.311	0.140–0.689	.004	0.193	0.057–0.659	.009
≧65	0.813	0.361–1.833	.618	0.372	0.099–1.390	.141
Methods						
Fights/brawls/rape	Reference			Reference		
Corrosive or caustic substance	0.000	—	.998	38.121	9.64–150.69	<.001
Poisoning	1.849	0.825–4.144	.135	0.547	0.067–4.498	.575
Hanging	4.653	2.690–8.046	<.001	4.571	0.533–39.20	.166
Drowning	27.091	8.386–87.51	<.001	13.615	1.53–120.45	.019
Firearms	100.355	23.20–434.0	<.001	128.383	35.39–465.7	<.001
Cutting and piercing	1.168	0.880–1.550	.282	4.783	2.321–9.857	<.001
Abuse	2.312	1.425–3.750	.001	1.620	0.692–3.789	.266
Others	1.094	0.860–1.391	.464	1.661	0.843–3.271	.143
Late effect	0.000	-	.990	5.467	1.450–20.622	.012
Low income						
Without	Reference			Reference		
With	3.447	2.122–5.601	<.001	0.520	0.068–4.002	.530
Catastrophic illness						
Without	Reference			Reference		
With	23.584	17.20–32.32	<.001	5.064	1.871–13.70	.001
CCI_R	1.125	1.009–1.255	.035	1.185	0.858–1.635	.303

Nagelkerke R-square = 0.180 (overall), 0.185 (male), and 0.225 (female).

Adjusted OR = adjusted odds ratio: Adjusted variables listed in the table, CI = confidence interval.

Table 3

The trend of inpatients' hospitalization rate.

Variable	**Male**			**Female**		
Year	**Inpatient**	**Mid-year population**	**Rate (per 10^5)**	**Inpatient**	**Mid-year population**	**Rate (per 10^5)**
1998	3239	1,124,340	28.81	1042	1,068,518	9.75
1999	3467	1,131,272	30.65	1173	1,077,965	10.88
2000	3720	1,139,205	32.65	1139	1,088,462	10.46
2001	3886	1,144,165	33.96	1153	1,096,391	10.52
2002	3951	1,148,540	34.40	1197	1,103,536	10.85
2003	3754	1,151,506	32.60	1062	1,108,948	9.58
2004	3742	1,154,158	32.42	1082	1,114,753	9.71
2005	3365	1,156,244	29.10	924	1,120,794	8.24
2006	3254	1,159,170	28.07	766	1,128,482	6.79
2007	2878	1,160,876	24.79	719	1,134,959	6.34
2008	2563	1,162,635	22.04	709	1,141,068	6.21
2009	2283	1,163,673	19.62	652	1,148,303	5.68
2010	2421	1,163,522	20.81	583	1,152,689	5.06
2011	2543	1,164,567	21.84	610	1,157,923	5.27
2012	2933	1,167,331	25.13	893	1,164,250	7.67
2013	3002	1,168,467	25.69	964	1,168,884	8.25
2014	4184	1,169,797	35.77	1134	1,173,578	9.66
2015	3976	1,171,204	33.95	1162	1,178,002	9.86
Trend test						
b(sloop)	−29.528	23,803.95	−0.317	−15.643	63,137.98	−0.191
P Value	.285	<.001	.187	.113	<.001	.104
R-square	0.071	0.890	0.106	0.150	0.992	0.252

(49.88% vs 47.96%, respectively). The in-hospital death risk of male patients was 1.673 times greater than that of females. The risk of in-hospital death for low-income male patients was 3.447 times greater than that of non–low-income male patients. The risk of in-hospital death for male patients with catastrophic illnesses was 23.584 times greater than that of male patients

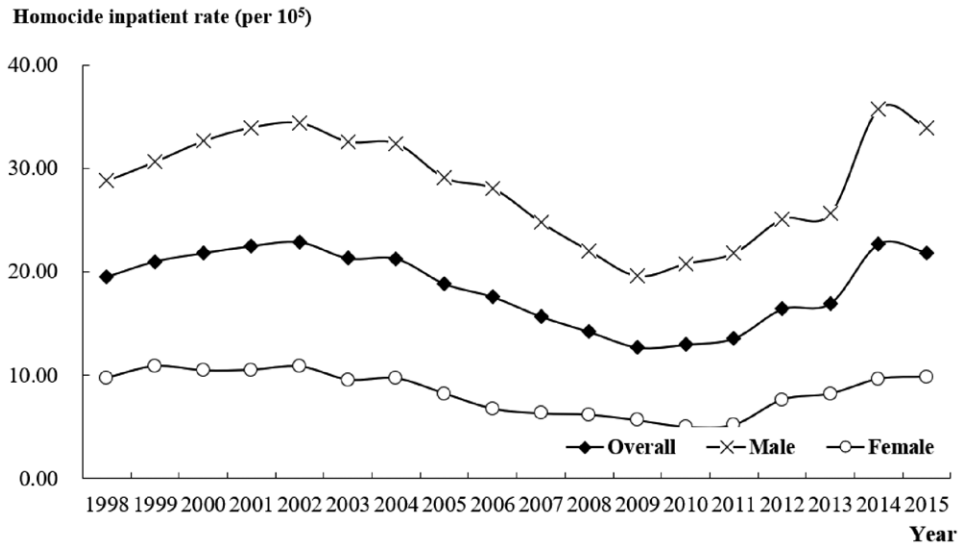

Figure 2. Trends in hospitalization rates of attempted homicides in Taiwan from 1998 to 2015.

with noncritical diseases; similarly, the risk of in-hospital death for female patients with catastrophic illnesses was 5.064 times greater than that for female patients with noncritical diseases. From 1998 to 2015 in Taiwan, the rate of increase in the number of male patients hospitalized after attempted homicides was greater than that of females ($5.03/10^5$).

Previous studies have shown that in all age groups across low-, middle-, and high-income countries, the homicide mortality rate of men is higher than that of women.[13] The only exceptions in young groups lie in low- and high-income countries. With regard to 15-year-old children, the homicide rate of females is similar to or higher than that of males.[14]

Across the world, homicides are rarely committed by women. Thus, for a long time, men were the focus of attention by police and social psychologists. In contrast, while women do commit crimes, there are relatively few cases of homicides.[15,16] Unless criminal data on female homicides and male homicides is examined separately, that is, by sex, little will be known about female homicide. Compared with men who commit violent crimes, women who commit homicides are not considered to pose a threat to society: partly because their victims are usually their partners or children.[17] In addition, it is generally believed that when a woman commits a murder, it is considered to have been in self-defense, as she was likely a victim of long-term domestic abuse or suffering from mental illness.[18] In the absence of a mental illness diagnosis, it is culturally unacceptable to treat women as homicidal killers.[19] Therefore, when diagnosing female perpetrators of homicide, there may be potential prejudice toward their "abnormal state of mind," which, through the judicial system and its care channels, may result in the law also being biased in the judgment of women.[20]

However, in our study, having a history of mental illness is not an associated factor between men or women and the risk of in-hospital death among victims of attempted homicides. The possible reason is that men and women are not willing to provide information about whether they have been labeled or stigmatized as having a history of mental illness.

Researchers from Sweden's Karolinska Institute, Stockholm University, and other institutions have undertaken a huge project[21] to jointly investigate all violent homicide cases in Sweden from 1990 to 2010, focusing on the differences between male and female murderers. The results reveal that in the homicide cases in Sweden from 1990 to 2010, the incidence of male and female homicides has decreased.[22] Male and female murderers differ in terms of how they kill children and adults.[21] Although the total murder rate has declined during the 20 years of the study, 90% of the murderers are still males. For every victim killed by a female murderer, there are 9 others victims killed by a male murderer.[23,24] There is also a clear difference between male and female offenders and victims who are adults: if a female offender kills an adult, that adult is often a male and her close partner. Before committing a crime, female offenders are often embroiled in marital disputes. Many male victims have even had violent conflicts with female offenders. For example, in the family, female offenders may have been subjected to domestic violence.[25] The male victim may have been drunk at the time of the crime and was seriously injured by a sharp object, which subsequently resulted in his death.[25] In addition, in the case of female homicides, male victims often die by the knife, perhaps because the female perpetrators of homicide feel that it is an appropriate tool with which to vent their long-repressed hatred.[26] People killed by males are primarily friends or partners of the same sex.[27] The previous "homicide" between the victim and the offender was also more common in cases where women were the "offenders," and they committed suicide less frequently after homicides.[28] The difference between male and female offenders who kill minor victims aged <15 years is not obvious. Minors often die as a result of violent abuse by males, while female offenders tend to use suffocation more often. Moreover, female offenders have fewer previous criminal records.[29] Another difference is that women more often commit crimes at home,[30] which is the most common murder scene in general, but especially so for female offenders. Of every 10 murder cases, nearly 9 occurred at home.[31] Not only that, although women are hailed as guardian angels for children, the proportion of children murdered is highest among the female homicide cases.[31] Researchers found that when the victim is a minor <15 years old, female offenders accounted for more than one-third of the crimes.[32] Nilsson,[33] a researcher at the Sahlgrenska Academy at the University of Gothenburg, said: "Homicide seems to be part of an active 'anti-social lifestyle' for male criminals, characterized by impulsivity, extroverted behavior, and conviction." Female criminals seem to lack such a typical "antisocial feature."[33] Researchers also found that social and cultural environments also affect the crime rate. For example, whether male or female, people who have been under pressure from public opinion for a long time and were raised in an imperfect family environment are more likely to commit homicide. These studies will help prevent crime.[34]

It is often noted that men and women view the effects of violence in very different ways. Men tend to take violent homicide as an offensive measure to establish an advantage, while women usually consider violent homicides as a last resort defense.[35] Although women's homicidal behaviors or violent crimes may stem from stereotypes (benefits of feminism), criminologists

suggest that homicide cases with women as perpetrators should be mitigated; but, in reality, women are punished twice: once for breaking the law and again because of gender roles that violated legal traditions.[36] Regarding the relevance of the link between women's gender differences and homicide, it can help us understand how to prevent and improve women's homicides.

Our research shows that the risk of homicide-related in-hospital death among male patients is 1.673 times greater than that of female patients. Especially in terms of low income and catastrophic illness, the risk of death among male patients is greater than that of female patients.

There are several limitations to this study. First, the data from the HWDC, MOHW, did not provide important information about accident injuries. Second, information on other variables (such as daily life, drinking, and smoking) and biochemical test values were also restricted. Although this study used E-code to analyze homicide, the E-Code is only recorded in the hospitalization documents; thus, there is no E-Code annotation in the outpatient and emergency documents. Therefore, this study may have underestimated the number of cases and overall medical utilization. Finally, due to the use of auxiliary database analysis, the possibility of data classification errors and information bias cannot be ruled out.

5. Conclusion

Our research results further confirm that there is indeed a difference between gender and homicide, revealing that the risk of in-hospital death after an attempted homicide is greater for males than for females. Especially in terms of low income and catastrophic illness, the risk of in-hospital deaths is greater for male than for female patients. Male patients also have a greater tendency to suffer in-hospital death than do female patients.

Regardless of the focus, greater awareness of the universality of gender differences and a thorough understanding of the relationship between gender differences and homicide will encourage interventions and preventive efforts to reduce the homicide mortality rate, while also ensuring an appropriate evaluation of and response to increasingly complex homicide criminal activities.

Author contributions

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