Risk Factors for Mortality among Victims of Provincial Unrest in Southern Thailand

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ABSTRACT

The study aimed to identify the factors associated with those injured due to the unrest during 2004–2011 in the three southern border provinces and the surrounding districts of Songkhla, Thailand. In total, 13,964 victims were reported including 4,142 (29.7%) fatalities. Logistic regression showed that males were 2.32 times more likely to die than females while Muslims were 1.45 times more likely to die than non-Muslims. Victims working for the police or military had a lower risk of mortality than other occupations (1.9 times). Victims who had been injured by a gunshot or other causes had a higher risk of mortality than those who were affected by a bomb blast.

Keywords: injuries, unrest, southern border province, Thailand

บทคัดย่อ

การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาปัจจัยที่มีความสัมพันธ์กับการบาดเจ็บและเสียชีวิตจากเหตุการณ์ความไม่สงบในจังหวัดชายแดนภาคใต้ของประเทศไทย ตั้งแต่ ปี พ.ศ. 2547 ถึง พ.ศ. 2554 ผลการศึกษาพบว่า มีผู้ที่บาดเจ็บและเสียชีวิตจากเหตุการณ์จำนวน 13,964 ราย ในจำนวนนี้มีผู้เสียชีวิต 4,142 ราย คิดเป็นร้อยละ 29.7 เมื่อวิเคราะห์ปัจจัยที่มีอิทธิพลต่อการบาดเจ็บและเสียชีวิตโดยใช้การถดถอยโลจีสติกส์ ผลการศึกษาพบว่า เพศชายมีโอกาสเสี่ยงที่จะถูกทำร้ายจนเสียชีวิตมากกว่าเพศหญิง 2.32 เท่า ในขณะที่ผู้ที่นับถือศาสนาอิสลามมีโอกาสเสี่ยงที่จะถูกทำร้ายจนเสียชีวิตเป็น 1.45 เท่า เมื่อเทียบกับผู้ที่นับถือศาสนาอื่นๆ ผู้ที่ประกอบอาชีพที่ไม่ใช่ตำรวจหรือทหาร มีโอกาสเสี่ยงที่จะถูกทำร้ายจนเสียชีวิตเป็น 1.9 เท่า เมื่อเทียบกับตำรวจหรือทหาร รวมทั้งผู้ที่บาดเจ็บจากการถูกยิงมีโอกาสเสี่ยงที่จะเสียชีวิตมากกว่าผู้ที่บาดเจ็บจากการถูกระเบิด

คำสำคัญ: การบาดเจ็บ เหตุการณ์ความไม่สงบ จังหวัดชายแดนภาคใต้ ประเทศไทย

INTRODUCTION

Recently, terrorist events around the world have continued to occur, causing major social problems in the affected countries. National

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Counterterrorism Center (2011) reported extensively on terrorism. In 2010, terrorist attacks occurred in 72 separate countries, resulting in a massive number of injuries (70%) and fatalities (30%). Most of the casualties were Muslims and the most favored occupational targets were police and other paramilitary groups. The South Asia region has had the largest number of terrorist attacks, accounting for approximately 38 percent of all casualties in 2010 with around 38 percent of these being fatalities. The National Counterterrorism Center reported that in this region, the highest number of deaths occurred in Afghanistan (3,204) followed by Pakistan (2,150), while the Near East region had the second highest number of terrorist attacks with 30 percent of the total—Iraq had the highest number of deaths in this region with 3,364. Of the 72 high-ranked countries affected by fatalities due to terrorist attacks, Iraq, Afghanistan, and Pakistan were the three top ranking, respectively, while Thailand was ranked eighth.

Previous research has examined various age and gender aspects of the victims. Several studies have reported that the majority of victims were male (Peleg, Daniel, Michael, & Shapira, 2003; Peleg, Daniel, & Stein, 2004; Yavuz et al., 2004) and young adults (Peleg et al., 2003; Yavuz et al., 2004). The type of weapons used in terrorist attacks differed considerably, with bombs being the most commonly used followed by guns (Peleg et al., 2003, 2004; Chaiphrom, Kanchanaroek, & Khumwattana, 2009).

In Thailand, the unrest that has developed in the southern border region has parallels with many other regions of the world that have experienced terrorist attacks in recent years. The southern border provinces of Thailand comprise Pattani, Yala, and Narathiwat, with 80 percent of the population being Muslim and the remainder almost entirely Buddhist. These three provinces contain several ethnic groups, who for many years have been living together peacefully in a multicultural society. However, on 4 January, 2004, a group of people attacked an army camp in Narathiwat province, seizing a large cache of weapons and killing four soldiers in the process. During the ensuing days, 20 schools were set on fire. Since then, the violence, which has included arson attacks on government buildings, bombings, and assassinations, has continued non-stop. These events triggered strong unrest among the people of the region, with a steadily increasing trend of violent events expanding to adjacent districts in Songkhla province (Marohabout, Choonpradub, & Kuning, 2009).

The aim of the current study was to describe the characteristics of the victims who have been affected by violent events arising from the unrest, and to identify the factors associated with fatalities caused by the unrest during 2004–2011 in the three southern border provinces and surrounding districts of Songkhla province, Thailand.

RESEARCH METHODS

Data source

This study was a retrospective cross-sectional study of all victims of the unrest occurring in the three southern border provinces of Thailand (Pattani, Yala, Narathiwat) and four districts of Songkhla province (Chana, The Pa, Saba Yoi and Na Tawi) from the beginning of January 2004 to the end of December 2011. The data sourced from the police, military and local administration reports on the incidence and characteristics of violent injuries from the unrest were merged and validated with the Violence-related Injury Surveillance (VIS) data from 38 community hospitals. A daily record was obtained from a database managed by the Deep South Co-ordination Center (DSCC), Prince of Songkla University, Pattani Campus, Thailand. The outcome was a variable representing whether each victim died or not. The determinant variables comprised demographic factors of the victims (gender, religion, age group, and occupation) and characteristics of the event (type of weapon used, province, and year).

Statistical methods

Pearson's chi-squared test was used to assess the associations between the outcome and each determinant. Logistic regression was used to estimate the relative odds of dying for all predictor variables using a backward stepwise method to eliminate variables from the model, that is

$$\ln\left(\frac{p}{1-p}\right) = \alpha + \sum_{i=1}^{n} \beta_i x_i$$

where p denotes the probability of occurrence of the specified outcome, α is the constant coefficient, β_i is the set of regression coefficients, and x_i are the set of determinant variables. The likelihood ratio (L-R) test was used to assess the statistically significant association between the outcome and each determinant in the model. The association between each category in each determinant and outcome was assessed using Wald's test.

All statistical analyses and graphs were performed using the R program software (R Development Core Team, 2013).

RESULTS

From January 2004 to December 2011, 13,964 victims were recorded in the DSCC database including 4,142 (29.7%) fatalities. Table 1 shows that more than half (59.8%) of the victims were non-Muslim, however more than half of the fatalities were Muslims (57.3%). Of the fatalities, 90.9 percent were males, aged between 25 and 44 years (50.3%) and not working for the police or military (84.4%). The most common type of weapon used in fatalities was a gun or other weapon (89.4%). About the same proportion of events resulting in fatalities occurred in three provinces as Pattani, Yala and Narathiwat (32.6%, 31.6%, and 31.6%, respectively). The number of fatalities increased from 365 in 2004 to 1,101 in 2007, but decreased to 331 in 2010. Figure 1 shows that in 2007, the numbers of dead and injured were high in all provinces. Figures 2 and 3 show that the majority of fatalities were male, aged 25 to 44 years and neither police nor military personnel.

Table 2 shows that all risk factors were significantly associated with death. The risk of death was significantly higher in males (odds ratio (OR) = 2.32, 95% confidence interval (CI) [2.03,2.65]). Muslims (OR = 1.45, 95% CI [1.32,1.60]) and those aged more than 24 years. In addition, those who were not working for the police or military had a higher risk of death (OR = 1.95, 95% CI [1.74,2.18]). Victims who had been shot or injured from other causes had a higher risk of death than those who were involved in a bomb blast (OR = 9.68, 95% CI [8.65,10.83]). Events causing fatalities were more likely to occur in Songkhla (OR = 1.57, 95% CI [1.25,1.98]) and Pattani (OR = 1.28, 95% CI [1.15,1.43]) compared with Narathiwat.

DISCUSSION

The results of this study showed that during the study period, the majority of fatalities among victims from the unrest were male, aged more than 24 years and Muslim. It is not clear why Songkhla had a higher fatality rate than the other provinces. Perhaps the study included only the high risk districts in Songkhla province. More civilians were killed than police or military personnel. A common misconception is that conflicts typically result in death and usually involve both troops and civilians. Death was more likely to occur as a result of a gunshot than from bombing. In contrast, other studies have indicated that most fatalities were the result of bombings (Peleg et al., 2004; Pusponegoro, 2003). The case fatality rate was 49.7 percent for victims who had been shot, which was higher than for those who were involved in a bomb blast (6.7%). More males were shot dead than females. Instantaneous death was often the result of a shooting. An additional explanation for the differences in fatalities due to bombings and shootings may be related to differences in the evacuation time (Shapira et al., 2006). In the current

study, shootings usually occurred in the suburbs, whereas bombings mostly happened in the center of a town or in markets or entertainment venues. The evacuation of injured victims from shootings takes longer than from bombings due to the fact that shootings often go unnoticed for a long time. Bomb blasts are much louder and attract the attention of onlookers who can report the situation to authorities. This delay in transporting victims to hospital for emergency treatment may be responsible for the high incidence of death during the first hours after a shooting.

Over 70 percent of all victims had non-fatal injuries. Some of these victims will recover, but some may experience partial or permanent disabilities or even die from their injuries. For those who survive, long-term psychological treatment may also be required.

Table 1 Frequency distribution of the risk factors

Variable	Injury[a]		Fatality[b]		Total[c]	
	n	%	n	%	n	%
Gender						
Female	1,889	19.2	377	9.1	2,266	16.2
Male	7,933	80.8	3,765	90.9	11,698	83.8
Religion						
Muslim	3,237	33.0	2,372	57.3	5,609	40.2
Non-Muslim	6,585	67.0	1,770	42.7	8,355	59.8
Age group years						
≤24	2,352	24.0	591	14.3	2,943	21.1
25–44	5,416	55.1	2,085	50.3	7,501	53.7
45+	2,054	20.9	1,466	35.4	3,520	25.2
Occupation						
Police/Military	3,897	39.7	647	15.6	4,544	32.5
Other	5,925	60.3	3,495	84.4	9,420	67.5
Type of weapon used						
Bomb	6,072	61.8	439	10.6	6,511	46.6
Gun/Other weapon	3,750	38.2	3,703	89.4	7,453	53.4
Province						
Songkhla	371	3.8	176	4.2	547	3.9
Pattani	2,425	24.7	1,352	32.6	3,777	27.1
Yala	3,152	32.1	1,307	31.6	4,459	31.9
Narathiwat	3,874	39.4	1,307	31.6	5,181	37.1
Year						
2004	521	5.3	365	8.8	886	6.3
2005	987	10.0	381	9.2	1,368	9.8
2006	1,214	12.4	535	12.9	1,749	12.5
2007	2,387	24.3	1,101	26.6	3,488	25.0
2008	1,387	14.1	535	12.9	1,922	13.8
2009	1,387	14.1	515	12.4	1,902	13.6
2010	980	10.0	331	8.0	1,311	9.4
2011	959	9.8	379	9.2	1,338	9.6

[a] n = 9,822 (70.3 %); [b] n = 4,142 (29.7%); [c] n = 13,964 (100.0%)

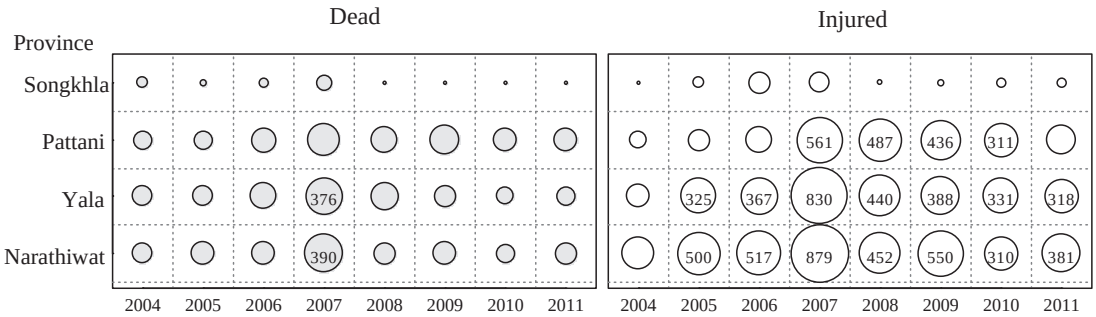

Figure 1 Bubble plot of victims by year in the four provinces in deep southern Thailand classified as dead and injured. Number of victims is shown where more than 300 per bubble.

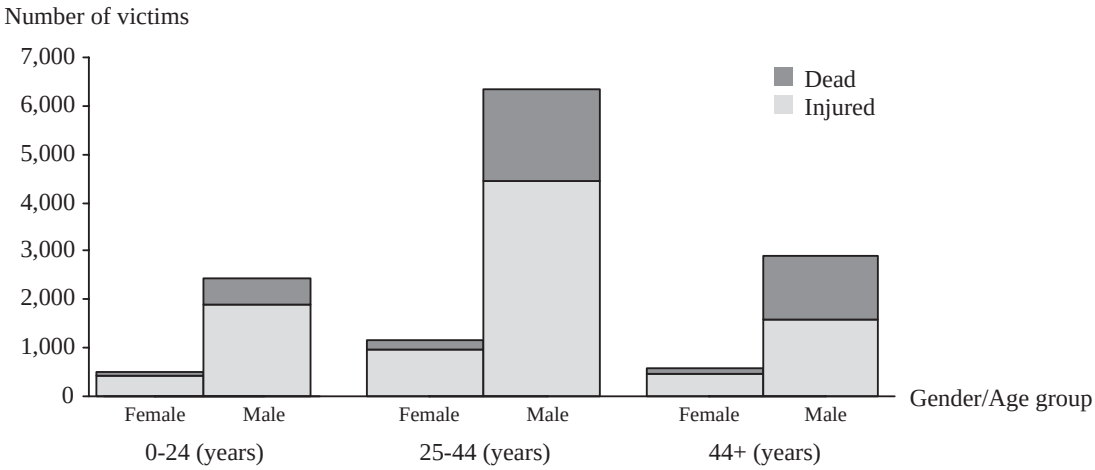

Figure 2 Comparison of victims by gender and age group classified by dead and injured

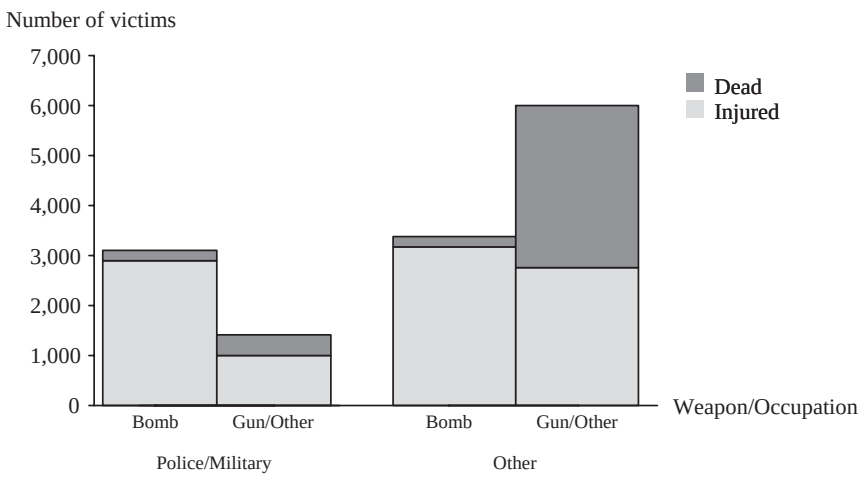

Figure 3 Comparison of victims by type of weapon and occupation classified by dead and injured

Table 2 Association between risk factors and death

Risk factor	OR [95% CI]	Wald's test (*p*-value)	L-R test (*p*-value)
Male gender	2.32 [2.03, 2.65]	< .001	< .001
Muslim religion	1.45 [1.32, 1.60]	< .001	< .001
Age group (ref= ≤ 24 years)			< .001
25–44	1.55 [1.37, 1.74]	< .001	
45+	2.46 [2.16, 2.81]	< .001	
Occupation (ref= Police/Military)			< .001
Other	1.95 [1.74, 2.18]	< .001	
Type of weapon used (ref=Bomb)			< .001
Gun/Other weapon	9.68 [8.65, 10.83]	< .001	
Province (ref=Narathiwat)			< .001
Songkhla	1.57 [1.25, 1.98]	< .001	
Pattani	1.28 [1.15, 1.43]	< .001	
Yala	1.09 [0.98, 1.21]	.113	
Year (ref=2004)			.024
2005	0.75 [0.61, 0.92]	.005	
2006	0.83 [0.68, 1.00]	.054	
2007	0.84 [0.70, 1.00]	.050	
2008	0.77 [0.63, 0.93]	.007	
2009	0.78 [0.64, 0.95]	.014	
2010	0.80 [0.64, 0.98]	.036	
2011	0.98 [0.79, 1.20]	.816	

Note: ref = reference variable

Unrest has a devastating effect on civilians and impacts the health of men, women, and children by decreasing their access to food, water, adequate shelter, and transportation and by damaging health infrastructure that protects populations from other negative health outcomes (Garfield, Frieden, & Vermund, 1987; Levy & Sidel, 1997; Zwi, 1997).

The attacks are unpredictable. In order to cope with them, sufficient lead time to allow for preparation is needed to reduce the number of lives lost. Preparedness can begin with each individual and extend to their families, friends, and co-workers. This can involve three levels of care: death and injury surveillance, strategies to reduce the number of casualties or disabled, and finally an effective emergency management system.

Emergency care should be given to victims whose lives are under immediate threat. Once implemented, the preparedness should improve the ability of public health agencies to respond to emergency situations arising from all sources, not just events resulting from unrest events.

All unrest-related events require local systems of emergency medical response based on local emergency medical service systems, hospitals, and public health resources. Understanding the patterns can have a significant impact and may influence the policy and decision-making process of emergency managers in locations at risk. It suggests that the first step in emergency preparedness for terrorism must be to ensure that communities have the requisite capacities, capabilities, and competencies to adequately respond to everyday conventional bombings and shootings that generate

large numbers of casualties before proceeding to contingency planning for alternative methods of terrorism, such as the use of weapons of mass destruction (Baez, Sztajnkrycer, Zane, & Giraldez, 2008).

CONCLUSION

In total, there were 13,964 victims of violence from the unrest in the three southernmost provinces and the surrounding districts of Songkhla province, Thailand, of which 29.7 percent died. Most victims were male, aged 24 years or older and not working in the police or military. The majority of victims were non-Muslim; however, the percentage of Muslim fatalities was higher than for non-Muslims. About the same proportion of events causing fatalities occurred in Pattani, Yala and Narathiwat. Hand-held weapons, such as guns, were the most often used method of attack. Seven risk factors were found to be highly significantly associated with death. Males, aged more than 24, being Muslim, and having an occupation other than police or military were risk factors associated with fatalities. Victims who were involved in a bomb blast had a lower risk of death than those who had been shot or injured from other causes.

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