

Chapter 8

Prevalence, Distribution, and Trends of Workplace Violence and Its Associated Health Problems: Findings from National Surveys of Taiwan

Yawen Cheng and Li-Chung Pien

Abstract Workplace violence is increasingly recognized as an important occupational health issue in Taiwan. This chapter provides an overview of the problem and policy debates concerning workplace violence in Taiwan, and presents empirical findings on its distributions, trends, antecedents, and associated health risks based on survey data of the general working population. Results showed that workplace violence in the forms of physical violence, verbal violence, psychological violence, and sexual harassment had increased markedly from 2010 to 2013. In general, women were more likely than men to experience workplace violence. In health care sectors, women had particularly higher prevalence rates of workplace violence than men, which may attribute to a greater gender inequality in health care settings. Results from multilevel analyses with adjustment of workers' actual experiences of workplace violence showed that neighborhood-level workplace violence was positively associated with mental health risks in women but not in men. This finding suggested that working in an environment where aggressive or abusive behaviors are more prevalent may entail a greater mental health risk to women. Research improvement should be made in many aspects, ranging from the measures for workplace violence, study designs to investigate the casual mechanisms of workplace violence and health consequences, to the strategies for effective prevention. Furthermore, as the nature of workplace violence are embedded in social context, researchers, and occupational health practitioners should pay attention to contextual factors that might influence societal tolerance of abusive work practices and workers' vulnerability to health impacts of workplace violence.

Keywords Workplace violence · Survey · Multi-level analysis · Mental health · Gender

Y. Cheng (✉) · L.-C. Pien
Institute of Health Policy and Management, College of Public Health,
National Taiwan University, Taipei, Taiwan
e-mail: yawen617@gmail.com

Introduction

Workplace violence is recognized as a serious psychosocial work hazard in many countries. According to the International Labor Organization (ILO), workplace violence is defined as “incidents where staff are abused, threatened or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being or health.” Violent incidents in the workplace can be physical or psychological, and the source may be from people outside the work organization, such as customers, clients or strangers, or from those within the work organization, including co-workers and supervisors (Martino 2002). In contrast to the term “workplace bullying,” which refers specifically to repeated and regular mistreatment with escalating aggression, long duration, and power imbalance between the perpetrator and the victim, the term workplace violence refers to a wide spectrum of conditions, ranging from physical attacks, homicide, verbal abuse, threat, bullying, mobbing to harassment (Chappell and Di Martino 2006).

There have been numerous empirical studies from western countries examining the prevalence and the forms of workplace violence in general working populations (Harrell 2011; Parent-Thirion et al. 2012; Venema and Klauw 2012). For instance, results from the European Working Conditions Survey of 2010 showed that prevalence rates of workers who had been exposed to verbal violence, psychological bullying, physical violence and sexual harassment over the previous month were 11, 4, 2, and 1 %, respectively (Parent-Thirion et al. 2012). High risk occupations for workplace violence have been recognized including health care workers, policemen, correctional officers, teachers, social workers, taxi drivers, sales personnel, and workers who interact frequently with certain clients in stressful conditions (Harrell 2011; Langeland 2012; Parent-Thirion et al. 2012; Pedersen and Christiansen 2005: 235). Certain work characteristics prone to workplace violence have also been identified, such as night work, shift work (Camerino et al. 2008), work involving time pressure and heavy workloads (Estryn-Behar et al. 2008; Hills and Joyce 2013), employment insecurity, interpersonal conflicts within the work organization and low workplace justice (Hills and Joyce 2013; Mehdad et al. 2012; Pien et al. 2014; Roche et al. 2010). In addition to physical health harm, victims of workplace violence have been found to have greater mental health risks such as anxiety, depression, and stress-related problems such as sleep disorders, burnout, and sickness absence (Lallukka et al. 2011; Mayhew and Chappell 2007; Takaki et al. 2010). Negative impacts of workplace violence on work organizations have also been documented, including reduced work morale, deteriorated work performance, and increased costs associated with workers’ compensation and corporate administrative expenses. However, studies on this topic have been largely conducted in western populations. Because workplace violence is likely to be perceived and responded to quite differently across different cultures and social circumstances, the prevalence, antecedents and health consequences might be experienced differently in East Asian populations.

This chapter begins with an overview of the problem of workplace violence in Taiwan, following by a brief review of analytical framework guiding epidemiologic studies on workplace violence and existing evidences from epidemiologic studies conducted in East Asian populations. In the second half of this chapter, we present empirical findings on the distributions, trends, antecedents, and health risks of workplace violence in the general working population of Taiwan.

Workplace Violence in Taiwan

In Taiwan, workplace violence has been a hot topic in recent years, as cases of workers being attacked or harassed by clients, supervisors or co-workers were increasingly reported by the media. The reported victims of workplace violence came from a wide range of occupations, including health care workers, social workers, security guards, salespersons and service workers, and the forms of workplace violence ranged from verbal abuses, sexual harassment to bodily attacks. Among these cases, increased attention has been on patient-to-staff violence in medical settings which appears to be on the rise since the early 2000s. In 2002, the Ministry of Health and Welfare promulgated a guideline for hospitals to strengthen security measures. The mostly publicized event in recent years occurred in December 2013, which involved a young female nurse who was slapped in the face by a township councilor because the latter's request to obtain medical information of her hospitalized father over the phone was refused. This event, after being publicized by the media, evoked a strong reaction from the nursing community, who had been for years protesting against prolonged working hours and inadequate labor rights protection. The public reacted sympathetically to the resentment from the nursing community, prompting the Ministry of Health and Welfare to amend the Medical Care Act. The amendment, passed by the Congress in January 2014, makes any violent act against medical personnel an indictable offense with a high level of punishment.

In response to growing public concerns regarding workplace violence, the Ministry of Labor of Taiwan had also amended the Occupational Safety and Health Act (OSHAct) in 2013 by introducing a new clause (Article 6, Paragraph 2), which stipulates that for enterprises with a workforce of 100 employees or more, "the employer shall properly plan and adopt necessary safety and health measures to prevent physical or mental harm caused by wrongful actions of others during the execution of job duties." The amended OSHAct has been formally implemented since July 2014. However, its feasibility has been challenged, due to the vague definition of "wrongful actions" and unclear directions for employers concerning the scope and content of "necessary safety and health measures."

Workplace Violence and Health Consequences

Analytical Framework of Psychosocial Work Hazards and Health

Workplace violence, defined as any form of aggressive or abusive behavior, is a type of psychosocial work hazard. A schematic framework linking psychosocial work hazards, reversible health responses and irreversible health outcomes is presented in Fig. 8.1 (Hurrell and McLaney 1988; Landsbergis 2009; Landsbergis et al. 2014).

In epidemiologic studies, workplace violence is often classified into the following four types: physical violence, verbal violence, psychological violence, and sexual harassment. It is known that how psychosocial work hazards are perceived and reacted could be greatly modified by personal factors, such as worker's personality, experience, work attitudes, work expectation, resources for coping and the co-existence of other stressors. It can also be expected that how aggressive behaviors are interpreted and responded are largely affected by surrounding cultural and social conditions. For instance, in a society or work organization where abusive behaviors are allowed or even encouraged, victims of workplace violence would be expected to tolerate the situation and to take on the consequences. The perception of workplace violence and workers' tolerance to workplace violence are expected to be greatly influenced by culture-specific factors as well as the presence and extent of labor protection policies. However, to our knowledge, the influences of

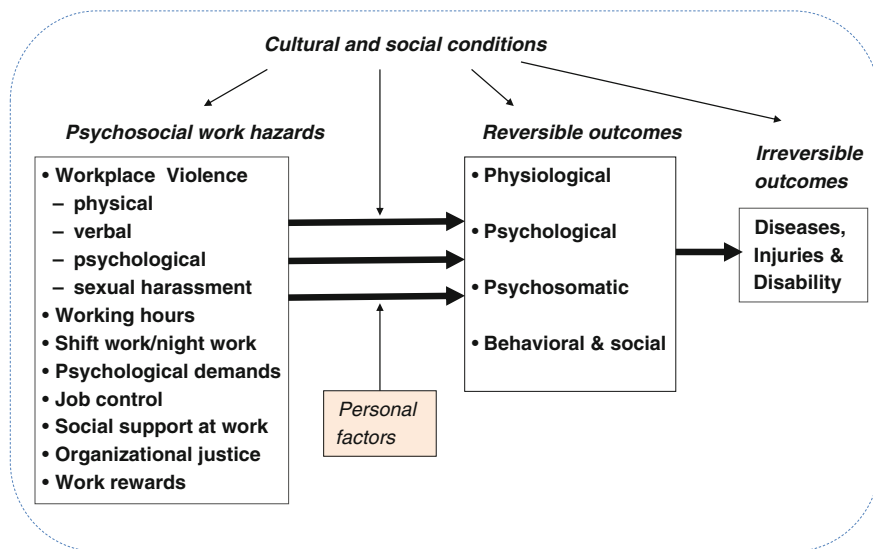


Fig. 8.1 Analytical framework of psychosocial work hazards and health

contextual factors on the perception of workplace violence and its impacts on workers' health and well-being have rarely been addressed in East Asian populations.

Medical Violence

In the East Asian countries, workplace violence has attracted considerable public attention and research interest, but most of the studies have focused on medical violence, especially patient-to-staff violence in physical nature (KOSHA 2012; Lee et al. 2014; Park 2013). In Taiwan, Chen et al. (2008) surveyed a total of 222 nursing workers at a psychiatric hospital, and reported very high one-year prevalence rates of verbal abuse, physical violence, bullying/mobbing and sexual harassment of 51, 35, 16, and 10 %, respectively. In another questionnaire survey of 521 nurses by Pai and Lee, the 1-year prevalence was 51 % for verbal abuse, 30 % for bullying/mobbing, 20 % for physical violence, and 13 % for sexual harassment (Pai and Lee 2011). These findings suggested that workplace violence in all forms are quite common in health care settings in Taiwan.

Workplace Bullying and Workplace Violence in the General Working Population

While workplace bullying and power harassment have been intensively studied in many western countries and in Japan, this issue has rarely been investigated in Taiwan. In Japan, a recent survey of 699 general workers who volunteered to answer a survey questionnaire in the Tokyo area revealed a prevalence of personally experienced workplace bullying of 15 % over the past 6 months (Naito 2013). Another study from Japan based on a representative sample of community-based working population showed that over the past month prior to the survey, 6 % of respondents had experienced workplace bullying (Tsuno et al. 2015). In a recent study from South Korea, Lee et al. utilized data from the 2011 Korean Working Conditions Survey of 29,171 employees and reported that the prevalence rates of verbal abuse, threats or humiliating behaviors and unwanted sexual attention over the past month were 4.8, 1.5, and 1.0 %, respectively (Lee et al. 2014). Studies from South Korea and Japan have consistently shown that temporary employees, workers with long working hours, night workers, shift workers, and workers with low socioeconomic status were at an increased risk of experiencing workplace bullying (Lee et al. 2014; Tsuno et al. 2015). In Taiwan, there have been growing interests in the problems of workplace bullying as well as various types of workplace violence in working people besides health care workers.

In the following section, we present empirical evidence of workplace violence in the general working population of Taiwan.

Prevalence, Distribution and Trends of Workplace Violence and Its Associated Health Problems in General Employees of Taiwan

Survey Methods

The Ministry of Labor of Taiwan has conducted nationwide cross-sectional surveys of the general working population every 3–5 years since 1994. In each round, a representative sample of employees in Taiwan was selected by a two-stage random sampling process. In the first stage, all districts and villages throughout Taiwan were grouped into 23 urbanization levels, and from each level, districts and villages were randomly selected. In the second stage, a random sample of households was selected within each district or village, and residents of the sampled households who were working at the time of the survey were identified and invited to participate in the survey.

A standardized self-administered questionnaire was delivered by a trained interviewer to the selected household, which was collected after one week by the same interviewer and onsite checking was performed to ensure its completeness. We utilized cross-sectional data from the surveys conducted in 2010 and 2013. The questionnaire included items which assessed the experiences of workplace violence encountered over the previous 12 months, including physical violence (such as beating, kicking, pushing, pinching, pulling), verbal violence (such as abusive language, verbal harassment, cynical comments), psychological violence (such as threats, intimidation, discrimination, exclusion, bullying, harassment), and sexual harassment (such as sexually suggestive and inappropriate behavior). Psychosocial work characteristics were assessed, which include five items for psychological job demands (work fast, work hectic, excessive work, no enough time, work required concentration), three items for job control (learn new thing, no repetitive work, own decision), 1 item for physical job demands, one item for job insecurity, and seven items for workplace justice (fair responsibility, fair work rewards, fair evaluation, respect, trust, transparency, reliable information). Items for psychosocial job demands and job control were adopted from the Chinese version of the Job Content Questionnaire (C-JCQ), which was based on Karasek's Job Strain model. This model postulates that a combination of high demands and low control causes high job strain and leads to negative health outcomes (Cheng et al. 2003; Karasek and Theorell 1990). Workplace justice is defined as the extent to which employees are treated fairly and with respect in the workplace (Colquitt 2001; Moorman 1991). The validity of the Chinese version of the 9-item scale can be found elsewhere (Cheng et al. 2011). Due to the constraint on the length of questionnaire, only

selected items were included in the surveys. Responses of these items were all recorded on a four-point Likert scale. Self-rated health status, quality of sleep, mental health status and level of job satisfaction were also assessed.

The study population of the survey of 2010 consisted of 9509 male and 7777 female employees, and the study population of the survey of 2013, which was drawn independently, consisted of 9976 male and 8054 female employees.

Prevalence, Distributions, and Trends of Workplace Violence

The demographic characteristics and the prevalence of the four types of workplace violence and major health outcomes in the surveys of 2010 and 2013 are summarized in Table 8.1. Notable increases in the prevalence of all the four types of workplace violence were observed from 2010 to 2013.

In 2013, the percentages of employees who had experienced any type of workplace violence over the past year were 9.45 % in men and 10.62 % in women. Among male employees, security guards were found to have the highest prevalence of any workplace violence (16.71 %), following by low-skilled manual workers (11.54 %). Among female employees, high prevalence rates of workplace violence were found in health care workers (15.00 %) and workers in financial and business service sectors (13.88 %).

Among the four types of workplace violence, verbal violence was the most common, following by psychological violence, physical violence and sexual harassment. This finding was similar to that from other countries (Demir and Rodwell 2012; Lehto 2004; Lo et al. 2012; Parent-Thirion et al. 2012). Our findings also suggest that in general, women are more likely than men to suffer workplace violence in all forms except physical violence. However, in health care settings, women reported higher workplace violence in all forms: the one-year prevalence in men and women, respectively, was 6.10 and 11.49 % for verbal violence, 3.66 and 4.66 % for psychological violence, 2.44 and 2.48 % for physical violence, and 1.22 and 2.17 % for sexual harassment (Pien et al. 2014).

An examination across age groups revealed that younger employees were in general at higher risk for workplace violence, except for physical violence which was found to be more prevalent in men in the age range of 45–54 years. Furthermore, unfavorable work characteristics such as shift work, long working hours, heavy workloads, low and medium workplace justice and employment insecurity were found to be associated with higher risks for workplace violence (Table 8.2).

It is especially worth noticing that as compared to those who reported high workplace justice, male and female employees who reported low workplace justice had a 6.03- and 5.00-fold increased risks, respectively, for workplace violence (Table 8.3).

Table 8.1 Demographic characteristics, experiences of workplace violence over the past 12 months and health outcomes of participants in the 2010 and 2013 surveys

	Male				Female			
	2010 (n = 9509)		2013 (n = 9976)		2010 (n = 7777)		2013 (n = 8054)	
	n	%/SD	n	%/SD	n	%/SD	n	%/SD
Age (years): mean (SD)	40.89	10.01	40.54	11.26	39.32	9.69	38.86	10.89
15–24	–	–	641	6.43 %	–	–	688	8.54 %
25–34	3124	32.85 %	2821	28.28 %	3006	38.65 %	2555	31.72 %
35–44	2851	29.98 %	2781	27.88 %	2267	29.15 %	2223	27.60 %
45–54	2457	25.84 %	2484	24.90 %	1947	25.04 %	1827	22.68 %
55–65	1077	11.33 %	1175	11.78 %	557	7.16 %	732	9.09 %
66 above	–	–	74	0.74 %	–	–	29	0.36 %
Education level								
<Junior high	1986	20.89 %	1962	19.67 %	1365	17.55 %	1352	16.79 %
Senior high	4805	50.53 %	4796	48.06 %	3900	50.15 %	3754	46.61 %
University and above	2718	28.58 %	3218	32.26 %	2512	32.30 %	2948	36.60 %
Any violence ^a	753	7.90 %	943	9.45 %	727	9.35 %	856	10.62 %
Physical	77	0.81 %	150	1.50 %	37	0.48 %	70	0.87 %
Verbal	647	6.80 %	805	8.07 %	582	7.48 %	695	8.63 %
Psychological	322	3.39 %	407	4.08 %	316	4.06 %	370	4.59 %
Sexual harassment	36	0.38 %	53	0.53 %	132	1.70 %	182	2.26 %
SRH (self-rated health)								
Good	6077	63.91 %	6361	63.76 %	4850	62.36 %	5100	63.32 %
Bad	3432	36.09 %	3615	36.24 %	2927	37.64 %	2954	36.68 %
Mental health by BRS ^b	–	–	2.75	3.23	–	–	3.11	3.38
In normal range	–	–	8514	85.35 %	–	–	6645	82.55 %
Mild- severe	–	–	3938	39.47 %	–	–	3260	40.48 %
Data missing	–	–	1	0.01 %	–	–	4	0.05 %
Sleep problems								
No	7711	81.09 %	8873	88.94 %	5948	76.48 %	6893	85.58 %
Yes	1798	18.91 %	1103	11.06 %	1829	23.52 %	1161	14.42 %

^aNumbers of the four types do not add up to “any violence” because some victims experienced multiple types of violence

^bBrief Symptom Rating Scale

The fact that workers with disadvantaged social positions were at higher risks for workplace violence has been consistently documented in previous studies (Estryn-Behar et al. 2008; Hills and Joyce 2013; Kamchuchat et al. 2008; Lawoko et al. 2004; Mehdad et al. 2012; Pien et al. 2014; Roche et al. 2010; Venema and

Table 8.2 Prevalence of workplace violence by age, education level and work characteristics in men and women (based on the 2013 survey data)

Variable	N	Male						Any violence (n = 943)			
		VV (n = 805)		PSV (n = 407)		PV (n = 150)		SH (n = 53)			
		n	(%)	n	(%)	n	(%)	n	(%)		
Age											
15-24	641	47	7.33	25	3.90	6	0.94	7	1.09	54	8.42
25-34	2821	246	8.72	132	4.68	39	1.38	14	0.50	287	10.17
35-44	2781	238	8.56	119	4.28	43	1.55	14	0.50	283	10.18
45-54	2484	186	7.49	92	3.70	47	1.89	9	0.36	220	8.86
55-65	1175	84	7.15	38	3.23	15	1.28	9	0.77	95	8.09
66 above	74	4	5.41	1	1.35	0	0	0	0	4	5.41
Education level											
<Junior high	1962	158	8.05	65	3.31	33	1.68	14	0.71	184	9.38
Senior high	4796	393	8.19	195	4.07	88	1.83	24	0.50	460	9.59
University and above	3218	254	7.89	147	4.57	29	0.90	15	0.47	299	9.29
Work shift											
Fixed day shift	7611	511	6.71	256	3.36	71	0.93	35	0.46	601	7.90
Night/Rotated shift	2264	281	12.41	144	6.36	75	3.31	18	0.80	327	14.44
Missing	101	13	12.87	7	6.93	4	3.96	0	0	15	14.85
Work hours/week (h)											
≤48 h	8510	638	7.50	331	3.89	119	1.40	49	0.58	755	8.87
>48 h	1466	167	11.39	76	5.18	31	2.11	4	0.27	188	12.82
Job control(3 items)											

(continued)

Table 8.2 (continued)

Variable	N	Male		PSV (n = 407)		PV (n = 150)		SH (n = 53)		Any violence (n = 943)	
		VV (n = 805)		n (%)		n (%)		n (%)		n (%)	
		n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
High	601	52	8.65	23	3.83	7	1.16	4	0.67	63	10.48
Medium	7573	575	7.59	288	3.80	115	1.52	42	0.55	664	8.77
Low	1802	178	9.88	96	5.33	28	1.55	7	0.39	216	11.99
Psychological demands (5 items)											
High	3077	426	13.84	219	7.12	56	1.82	13	0.42	489	15.89
Medium	4651	264	5.68	136	2.92	62	1.33	26	0.56	315	6.77
Low	2248	115	5.12	52	2.31	32	1.42	14	0.62	139	6.18
Missing	-	-	-	-	-	-	-	-	-	-	-
Workplace justice (7 items)											
High	781	33	4.23	18	2.30	8	1.02	4	0.51	37	4.74
Medium	8219	571	6.95	264	3.21	117	1.42	41	0.50	675	8.21
Low	894	200	22.37	122	13.65	25	2.80	8	0.89	228	25.50
Missing	82	1	1.22	3	3.66	0	0	0	0	3	3.66
Physically demanding											
Yes	5333	539	10.11	259	4.86	108	2.03	36	0.68	617	11.57
No	4634	265	5.72	147	3.17	41	0.88	17	0.37	324	6.99
Missing	9	1	11.11	1	11.11	1	11.11	0	0	2	11.11
Employment security											

(continued)

Table 8.2 (continued)

Variable	N	Male						Female					
		VV (n = 805)		PSV (n = 407)		PV (n = 150)		SH (n = 53)		Any violence (n = 943)			
		n	(%)	n	(%)	n	(%)	n	(%)	n	(%)		
Yes	4762	292	6.13	147	3.09	79	1.66	24	0.50	335	7.03		
No	5207	513	9.85	260	4.99	71	1.36	29	0.56	608	11.68		
Missing	7	0	0	0	0	0	0	0	0	0	0		
Variable	N	VV (n = 695)		PSV (n = 370)		PV (n = 70)		SH (n = 182)		Any violence (n = 856)			
		n	(%)	n	(%)	n	(%)	n	(%)	n	(%)		
Age													
15–24	688	65	9.45	28	4.07	6	0.87	21	3.05	82	11.92		
25–34	2555	262	10.25	139	5.44	25	0.98	74	2.90	319	12.49		
35–44	2223	180	8.10	96	4.32	12	0.54	45	2.02	221	9.94		
45–54	1827	128	7.01	82	4.49	14	0.77	29	1.59	161	8.81		
55–65	732	57	7.79	23	3.14	11	1.5	12	1.64	69	9.43		
66 above	29	3	10.34	2	6.90	2	6.9	1	3.45	4	13.79		
Education level													
<Junior high	1352	97	7.17	46	3.40	16	1.18	29	2.14	124	9.17		
Senior high	3754	299	7.96	151	4.02	26	0.69	99	2.64	371	9.88		
University and above	2948	299	10.14	173	5.87	28	0.95	54	1.83	361	12.25		
Work shift													
Fixed day shift	6463	471	7.29	263	4.07	44	0.68	100	1.55	584	9.04		
Night/Rotated shift	1525	220	14.43	106	6.95	25	1.64	81	5.31	268	17.57		
Missing	66	4	6.06	1	1.52	1	1.52	1	1.52	4	6.06		

(continued)

Table 8.2 (continued)

Variable	N	Female						Any violence (n = 856)			
		VV (n = 695)		PSV (n = 370)		PV (n = 70)			SH (n = 182)		
		n	(%)	n	(%)	n	(%)		n	(%)	
Work hours/week (h)											
≤48 h	7118	574	8.06	308	4.33	60	0.84	156	2.19	716	10.06
>48 h	936	121	12.93	62	6.62	10	1.07	26	2.78	140	14.96
Job control (3 items)											
High	446	47	10.54	27	6.05	4	0.90	12	2.69	55	12.33
Medium	5923	471	7.95	244	4.12	52	0.88	124	2.09	581	9.81
Low	1685	177	10.50	99	5.88	14	0.83	46	2.73	220	13.06
Psychological demands (5 items)											
High	2482	394	15.87	212	2.26	30	1.21	78	3.14	471	18.98
Medium	3665	222	6.06	115	3.14	26	0.71	63	1.72	270	7.37
Low	1906	79	4.14	43	8.54	14	0.73	41	2.15	115	6.03
Missing	1	–	–	–	–	–	–	–	–	–	–
Workplace justice (7 items)											
High	640	37	5.78	13	2.03	4	0.63	6	0.94	41	6.41
Medium	6665	491	7.37	240	3.60	50	0.75	137	2.06	619	9.29
Low	689	165	23.95	114	16.55	16	2.32	38	5.52	193	28.01
Missing	60	2	3.33	3	5.00	0	0	1	1.67	3	5.00
Physically demanding											
Yes	3284	409	12.45	207	6.30	50	1.52	101	3.08	480	14.62
No	4763	286	6.00	163	3.42	20	0.42	81	1.70	376	7.89
Missing	7	0	0	0	0	0	0	0	0	0	0

(continued)

Table 8.2 (continued)

Variable	N	Female						Any violence (n = 856)			
		VV (n = 695)		PSV (n = 370)		PV (n = 70)			SH (n = 182)		
		n	(%)	n	(%)	n	(%)				
Employment security											
Yes	3774	256	6.78	134	3.55	31	0.82	59	1.56	314	8.32
No	4264	437	10.25	236	5.53	39	0.91	122	2.86	539	12.64
Missing	16	2	12.50	0	0	0	0	1	6.25	3	18.75

Type of workplace violence: *PV* physical violence, *VV* verbal violence, *PSV* psychological violence, *SH* sexual harassment

Table 8.3 Logistic regression models of any workplace violence over the past 12 months in men and women (based on the 2013 survey data)

Variable	Male		Female	
	OR	(95 % CI)	OR	(95 % CI)
Age				
15–24	1.00		1.00	
25–34	1.21	(0.88, 1.66)	0.98	(0.75, 1.29)
35–44	1.20	(0.87, 1.64)	0.79	(0.60, 1.05)
45–54	1.12	(0.81, 1.55)	0.76	(0.57, 0.83)
55–65	1.14	(0.79, 1.63)	0.86	(0.61, 1.09)
66 above	0.96	(0.33, 2.77)	1.60	(0.53, 4.87)
Work shift				
Fixed day shift	1.00		1.00	
Night/rotated shift	1.69	(1.47, 1.93)***	1.66	(1.42, 1.94)***
Work hours/week (hrs)				
≤48 h	1.00		1.00	
>48 h	1.23	(1.03, 1.47)*	1.31	(1.07, 1.61)*
Job control (3 items)				
High	1.00		1.00	
Medium	0.87	(0.65, 1.16)	0.80	(0.59, 1.09)
Low	1.06	(0.77, 1.45)	1.00	(0.71, 1.40)
Psychological demands (5 items)				
Low	1.00		1.00	
Medium	1.07	(0.87, 1.32)	1.18	(0.93, 1.48)
High	2.50	(2.04, 3.06)***	3.10	(2.49, 3.86)***
Physically demanding				
No	1.00		1.00	
Yes	1.02	(1.00, 1.03)	1.00	(0.97, 1.03)
Employment security				
Yes	1.00		1.00	
No	0.99	(0.96, 1.02)	1.01	(0.99, 1.02)
Workplace justice (7 items)				
High	1.00		1.00	
Medium	1.81	(1.30, 2.53)***	1.57	(1.13, 2.17)**
Low	6.03	(4.21, 8.64)***	5.00	(3.48, 7.20)***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Klaw 2012). In our analyses, the prevalence of workplace violence was strongly associated with the level of perceived workplace justice. It suggests that the experiences of workplace violence may be closely embedded in the power structure within a work organization.

Health Consequences of Workplace Violence

Findings from multivariate analyses (see Table 8.4) showed that employees who had experienced any type of workplace violence were found to be at a higher risk for poor self-rated health status (OR men 2.10, women 2.37), poor mental health (OR men 3.16, women 3.05), and poor sleep quality (OR men 2.91, women 3.26), after adjustments for age and other work characteristics.

Among the four types of workplace violence, psychological violence appeared to have the strongest association with poor health and poor mental health. Studies from western populations also suggested that among all the four types of workplace violence, psychological type of workplace violence such as threat, intimidation, exclusion, and bullying seemed to carry the greatest health risks to affected workers (LeBlanc and Kelloway 2002; Mayhew and Chappell 2007; Pien et al. 2014). It could be explained by a closer link of psychological violence to an oppressive work culture or imbalanced power structure in the work organization, which is more likely to be a prolonged and collective phenomenon thus would have greater impacts on worker health and well-being. In contrast, the more explicit types of workplace violence such as physical violence may be more likely to be recognized and intervened thus may be less likely to lead to victim blaming.

Neighborhood Effects of Workplace Violence

Previous studies showed that residents living in a violent neighborhood were prone to mental disorders including depression and anxiety disorders (Clark et al. 2008). Dollard and her colleagues examined the interaction effects of environmental demands, reflected by the neighborhood levels of unemployment and public housing density, and personnel resources, measured at the work-station level, on police officer perceived distress and work morale; they concluded that organizational failure to adapt to the environmental context led to workers' distress and impaired work morale (Dollard et al. 2013). Similarly, one may expect working in a violent area or neighborhood where aggressive behaviors are more prevalent additional mental health risks, regardless of workers' experience of workplace violence. However, to our knowledge, little research has been conducted to examine the contextual effects of neighborhood characteristics on workers' mental health risks, independent from the effects of workers' actual experiences of workplace violence.

We analyzed data from the 2010 survey with a multilevel analytical approach to examine the associations of neighborhood-level workplace violence measured at the county/city level with individual-level mental distress status, after adjustment of individual-level experience of workplace violence as well as other work characteristics. Subjects who did not complete items for the assessment of workplace conditions ($n = 40$) and subjects in the Penghu County ($n = 137$) were excluded.

Table 8.4 Multiple logistic regression models of health outcomes and job dissatisfaction in male and female employees (based on the 2013 survey data)

Variable	Male				Female							
	Poor SRH		Poor mental health		With sleep problems		Poor SRH		Poor mental health		With sleep problems	
	OR	(95 %CI)	OR	(95 %CI)	OR	(95 %CI)	OR	(95 %CI)	OR	(95 %CI)	OR	(95 %CI)
Any violence	2.10	(1.82, 2.42)***	3.16	(2.70, 3.69)***	2.91	(2.42, 3.45)***	2.37	(2.03, 2.76)***	3.05	(2.60, 3.59)***	3.26	(2.76, 3.85)***
Physical violence	2.11	(1.50, 2.96)***	3.27	(2.30, 4.66)***	2.95	(2.03, 4.29)***	2.57	(1.54, 4.29)***	3.46	(2.08, 5.77)***	3.82	(2.30, 6.33)***
Verbal violence	2.13	(1.83, 2.49)***	3.20	(2.71, 3.77)***	2.95	(2.47, 3.52)***	2.39	(2.02, 2.83)***	3.39	(2.85, 4.04)***	3.51	(2.93, 4.20)***
Psychological violence	2.20	(1.78, 2.73)***	4.15	(3.33, 5.15)***	3.99	(3.18, 4.99)***	2.85	(2.26, 3.59)***	3.83	(3.05, 4.81)***	4.17	(3.31, 5.24)***
Sexual harassment	0.97	(0.54, 1.73)	2.24	(1.18, 4.25)*	2.55	(1.30, 4.99)**	1.41	(1.04, 1.91)*	1.55	(1.10, 2.19)*	2.25	(1.60, 3.15)***

Regression model controlled for age, work shift, work hours, job control, psychological demands, physical demands, employment security, and organizational justice

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

The size of this subgroup was small and the Penghu County is a small offshore island where working conditions are dramatically different from those in Taiwan. This resulted in a final sample size at the individual level (level 1) of 17,109 employees (9393 males and 7716 females) and at the neighborhood level (level 2) of 22 counties/cities. Descriptive statistical analyses and individual-level logistic regression were performed with SAS 9.3, and two-level random-effect logistic regression analyses were performed using HLM software version 7.

Findings from gender-stratified analyses showed that neighborhood-level prevalence of workplace violence ranged from 4.7 to 14.7 % in men and from 6.1 to 14.8 % in women across 22 counties/cities. As shown in Table 8.5, the intra-class correlation coefficient (ICC, defined as the between-neighborhood variance divided by the within-neighborhood variance plus the between-neighborhood variance), were 3.5 % in the null model of male subgroup and 2.9 % in female subgroup, both reaching the level of statistical significance ($P < 0.001$). Individual experience of workplace violence was the most significant predictor for mental distress problems, with odds ratios of 3.294 and 2.945 for men and women, respectively. In addition, compared to those who live in counties with low level of workplace violence, female workers who lived in counties with high level of workplace violence had increased risks for mental distress problems (OR = 1.749 in women). However, neighborhood workplace violence was not associated with mental health risk in men (Table 8.5) (Pien et al. 2015).

Reasons for increased mental health risks among workers who are exposed to a violence-prone environment could be multiple. First, workers who witness or hear of workplace violence may also feel threatened, causing anxiety and stress-related health problems. Second, a high occurrence of workplace violence can be seen as an indicator of unsafe working environment, where abusive behaviors or violent acts are tolerated and safety and mental health well-being of employees are neglected. Third, areas characterized with a high prevalence of workplace violence may indicate a work culture in which workplace violence is deemed unavoidable, and as a consequence, social support systems to prevent it for occurring or to assist victims are more likely to be fragmented or non-existent. Findings from our study suggest that preventative strategies targeting workplace violence should also pay attention to neighborhood and social environmental factors that might influence societal tolerance to abusive work practices and workers' vulnerability to mental health impacts of workplace violence.

Challenges and Future Directions

Research interest on workplace violence and workplace bullying is still quite limited in Taiwan. Results from our analyses showed that as compared to Western countries, the prevalence of workplace violence in the general working population of Taiwan was lower. However, media attention on workplace violence has been increasing in recent years. Further investigation will be needed to understand to

Table 8.5 Individual-level and county-level predictors of emotional distress: individual-level and multilevel models (based on 2010 survey data)

	Male				Female			
	Model with compositional variables only		Model with compositional and contextual variables		Model with compositional variables only		Model with compositional and contextual variables	
	OR	(95 % CI)	OR	(95 % CI)	OR	(95 % CI)	OR	(95 % CI)
Level 1								
Intercept	0.110	(0.085, 0.141) ***	0.125	(0.097, 0.161) ***	0.264	(0.166, 0.418) ***	0.185	(0.121, 0.284) ***
Individual-level workplace violence (yes/no)	3.294	(2.792, 3.886) ***	3.311	(2.805, 3.908) ***	2.945	(2.400, 3.614) ***	2.921	(2.378, 3.588) ***
Age 25–34 (Ref.)		1		1	1			
Age 35–44	1.316	(1.209, 1.432) ***	1.318	(1.211, 1.434) ***	1.178	(1.027, 1.352) *	1.179	(1.027, 1.353) *
Age 45–54	1.395	(1.270, 1.532) ***	1.398	(1.273, 1.536) ***	0.970	(0.842, 1.117)	0.969	(0.840, 1.118)
Age 55–65	1.053	(0.838, 1.323)	1.055	(0.841, 1.324)	0.839	(0.631, 1.116)	0.841	(0.632, 1.119)
Shift work (yes/no)	1.138	(1.056, 1.226) ***	1.139	(1.057, 1.227) ***	1.155	(1.030, 1.296) *	1.155	(1.028, 1.297) *
Working hours >48 h (yes/no)	1.153	(0.999, 1.330)	1.151	(0.997, 1.328)	0.979	(0.736, 1.303)	0.978	(0.734, 1.304)
Job control (continuous)	1.088	(1.032, 1.148) **	1.089	(1.032, 1.148) **	1.096	(1.052, 1.142) ***	1.096	(1.052, 1.142) ***
Psychological work demands (continuous)	1.252	(1.214, 1.290) ***	1.252	(1.214, 1.290) ***	1.255	(1.216, 1.297) ***	1.256	(1.215, 1.297) ***
Employment insecurity (yes/no)	1.168	(1.004, 1.359) *	1.168	(1.003, 1.360) *	1.014	(0.904, 1.137)	1.015	(0.905, 1.138)
Physical job demands (yes/no)	0.894	(0.773, 1.034)	0.895	(0.775, 1.034)	1.012	(0.886, 1.155)	1.013	(0.887, 1.156)
Workplace justice (continuous)	0.930	(0.912, 0.948) ***	0.930	(0.912, 0.948) ***	0.930	(0.914, 0.946) ***	0.930	(0.914, 0.946) ***
Level 2								
Workplace violence low (Ref.)			1				1	
Workplace violence medium			0.961	(0.648, 1.426)			1.636	(1.276, 2.098) ***
Workplace violence high			0.705	(0.474, 1.050)			1.749	(1.270, 2.410) **
Variance component	0.151***	0.148***	0.108**	0.047**				
ICC	0.151/(0.151 + 3.29) = 0.044		0.148/(0.148 + 3.29) = 0.043		0.108/(0.108 + 3.29) = 0.032		0.047/(0.047 + 3.29) = 0.014	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table cited from: Pien et al. (2015). Associations of neighborhood-level workplace violence with workers' mental distress problems: a multilevel analysis of Taiwanese employees. *Journal of Occupational Health*, 57: 555–564

what extent the observed increases in the prevalence of workplace violence from 2010 to 2013 reflect the changes in occurrence of workplace violence or to the increasing recognition of the existing reality of problematic workplace practices or behaviors which might have long been regarded as normal and tolerated.

Findings concerning high risk populations, correlated work characteristics and health consequences of workplace violence from our analyses are in general consistent with previous studies. However, it is noticed that in Taiwan, women were more susceptible than men to workplace violence. Health care workers were found to have relatively high prevalence rates of workplace violence and a noticeable gender inequality in the prevalence of all forms of workplace violence even with adjustment for major work characteristics. This phenomenon may be attributed to a greater gender inequality in the workplace of Taiwan. In-depth investigation is needed to understand the nature and the gender aspects of abusive or violent behaviors in general workplaces and in specific work settings. Our findings that level of workplace violence at the neighborhood-level influence workers' mental health status also deserve further exploration. To our knowledge, very few studies have been conducted to investigate how societal tolerance to abusive work practices affects workers' physical and mental health status even for bystanders.

There were several limitations in our surveys. First, the cross-sectional nature of the surveys restricted the causal interpretation of the observed associations. Reverse causations are possible. For instance, workers with existing mental health problems may have exaggerated the problems of workplace violence, and/or more easily become victims of workplace violence (Aquino and Bradfield 2000; Nielsen and Einarsen 2012). Future research should use a longitudinal study design to better understand the causal consequences of workplace violence on workers' health. The second limitation concerns the measure of workplace violence, which was based on self-report and contained no detailed information regarding the nature of workplace violence. Future research should assess the problems of workplace violence in a more objective manner and specify the sources, frequency, severity as well as relevant contextual factors such as attitude of others or responses from the work organization toward the workplace violence.

The labor authority of Taiwan has taken steps to respond to the growing public concerns of workplace violence, including adopting a preventive clause in the Occupational Safety and Health Act (OSHAct), establishing procedures specifically designed for the reporting and investigating of workplace violence, and strengthening labor inspection accordingly. However, it remains questionable if these measures could be effectively implemented. There has been a lot of discussion on these issues. A major issue concerns the definition of workplace violence, especially in the form of psychological violence. Employers' groups have raised criticisms regarding the new regulation, arguing that language and terminology used in legislation are ambiguous and the scope of employers' responsibility are poorly defined. On the other hand, labor rights groups have demanded the labor authority to establish a helpline to encourage reporting and to strengthen mechanisms for the protection of victims and, as well, whistle-blowers of workplace violence.

While the policy debate on workplace violence is evolving quickly in Taiwan as well as in many other countries, more research is urgently needed. Research improvements could be made in many aspects, ranging from the measures for workplace violence, study designs to investigate the casual mechanisms of workplace violence and health consequences, to the strategies for effective prevention of workplace violence. Researchers should also bear in mind that the nature of workplace violence is embedded in a social context, which can differ greatly across countries. Therefore, a comprehensive understanding of the local context is essential for developing effective policy actions to workplace violence.

References

- Aquino, K., & Bradfield, M. (2000). Perceived victimization in the workplace: The role of situational factors and victim characteristics. *Organization Science, 11*(5), 525–537.
- Camerino, D., Estryng-Behar, M., Conway, P. M., van Der Heijden, B. I., & Hasselhorn, H. M. (2008). Work-related factors and violence among nursing staff in the European NEXT study: A longitudinal cohort study. *International Journal of Nursing Studies, 45*(1), 35–50.
- Chappell, D., & Di Martino, V. (2006). *Violence at work*. Geneva: International Labour Organization.
- Chen, W. C., Hwu, H. G., Kung, S. M., Chiu, H. J., & Wang, J. D. (2008). Prevalence and determinants of workplace violence of health care workers in a psychiatric hospital in Taiwan. *Journal of Occupational Health, 50*(3), 288–293.
- Cheng, Y., Luh, W. M., & Guo, Y. L. (2003). Reliability and validity of the Chinese version of the Job Content Questionnaire in Taiwanese workers. *International Journal of Behavioral Medicine, 10*(1), 15–30.
- Cheng, Y., Huang, H. Y., Li, P. R., & Hsu, J. H. (2011). Employment insecurity, workplace justice and employees' burnout in Taiwanese employees: A validation study. *International Journal of Behavioral Medicine, 18*(4), 391–401.
- Clark, C., Ryan, L., Kawachi, I., Canner, M. J., Berkman, L., & Wright, R. J. (2008). Witnessing community violence in residential neighborhoods: A mental health hazard for urban women. *Journal of Urban Health, 85*(1), 22–38.
- Colquitt, J. (2001). On the dimensionality of organizational justice: A construct validation of a measure. *Journal of Applied Psychology, 86*, 386–400.
- Demir, D., & Rodwell, J. (2012). Psychosocial antecedents and consequences of workplace aggression for hospital nurses. *Journal of Nursing Scholarship, 44*(4), 376–384.
- Dollard, M. F., Osborne, K., & Manning, I. (2013). Organization–environment adaptation: A macro-level shift in modeling work distress and morale. *Journal of Organizational Behavior, 34*(5), 629–647.
- Estryng-Behar, M., van der Heijden, B., Camerino, D., Fry, C., Le Nezet, O., Conway, P. M., et al. (2008). Violence risks in nursing—results from the European ‘NEXT’ Study. *Occupational Medicine (Lond), 58*(2), 107–114.
- Harrell, E. (2011). Workplace violence, 1993–2009. *National crime victimization survey and the census of fatal occupational injuries*. Washington, DC: Bureau of Justice Statistics. www.bjs.gov/index.cfm?ty=pbdetail&iid=2377.
- Hills, D. J., & Joyce, C. M. (2013). Personal, professional, and work factors associated with Australian clinical medical practitioners' experiences of workplace aggression. *Annals of Occupational Hygiene, 57*(7), 898–912.
- Hurrell, J. J., Jr., & McLaney, M. A. (1988). Exposure to job stress—a new psychometric instrument. *Scandinavian Journal of Work, Environment & Health, 14*(Suppl 1), 27–28.

- Kamchuchat, C., Chongsuvivatwong, V., Oncheunjit, S., Yip, T. W., & Sangthong, R. (2008). Workplace violence directed at nursing staff at a general hospital in southern Thailand. *Journal of Occupational Health, 50*(2), 201–207.
- Karasek, R., & Theorell, T. (1990). *Healthy work. Stress, productively, and the reconstruction of working life*. New York: Basic Books.
- Korean Occupational Safety and Health Administration. (2012). Working conditions in Korea: Survey highlights.
- Lallukka, T., Rahkonen, O., & Lahelma, E. (2011). Workplace bullying and subsequent sleep problems—the Helsinki Health Study. *Scandinavian Journal of Work, Environment & Health, 37*(3), 204–212.
- Landsbergis, P. A. (2009). *Interventions to reduce job stress and improve work organization and worker health. Unhealthy work: Causes, consequences, cures* (pp. 193–209). Amityville, NY: Baywood Publishing.
- Landsbergis, P. A., Grzywacz, J. G., & LaMontagne, A. D. (2014). Work organization, job insecurity, and occupational health disparities. *American Journal of Industrial Medicine, 57*(5), 495–515.
- Langeland, B. T. (2012). Positive trends in working conditions and occupational health. *European Working conditions observatory (EWCO)*, 12.
- Lawoko, S., Soares, J. J., & Nolan, P. (2004). Violence towards psychiatric staff: A comparison of gender, job and environmental characteristics in England and Sweden. *Work & Stress, 18*(1), 39–55.
- LeBlanc, M. M., & Kelloway, E. K. (2002). Predictors and outcomes of workplace violence and aggression. *Journal of Applied Psychology, 87*(3), 444.
- Lee, H.-E., Kim, H.-R., & Park, J. S. (2014). Work-related risk factors for workplace violence among Korean employees. *Journal of Occupational Health, 56*(1), 12–20.
- Lehto, A.-M. (2004). Violence, bullying and harassment in the workplace. *European Foundation for the improvement of living and working conditions, 2007*. <http://www.eurofound.europa.eu/>.
- Lo, T. W., Chappell, D., Kwok, S. I., & Wu, J. (2012). Workplace violence in Hong Kong, China: Nature, impact, and preparedness. *International Journal of Offender Therapy and Comparative Criminology, 56*(6), 955–975.
- Martino, V. D. (2002). *Workplace violence in the health sector: Country case studies: Brazil, Bulgaria, Lebanon, Portugal, South Africa, Thailand, and an Additional Australian Study*. Geneva: ILO/ICN/WHO/PSI Joint Programme on Workplace Violence in the Health Sector.
- Mayhew, C., & Chappell, D. (2007). Workplace violence: An overview of patterns of risk and the emotional/stress consequences on targets. *International Journal of Law and Psychiatry, 30*(4–5), 327–339.
- Mehdad, A., Tabakh, E. Y., & Mehdizadegan, I. (2012). Relationship between perceived organizational justice and workplace violence intervention. *New Findings in Psychology, 7* (23), 19–36.
- Moorman, R. (1991). Relationship between organizational justice and organizational citizenship behaviors: Do fairness perceptions influence employee citizenship? *Journal of Applied Psychology, 76*, 845–855.
- Naito, S. (2013). *Workplace bullying and harassment*. Japan Institute for Labour Policy and Training Report, no. 12 (pp. 113–133). <http://www.jil.go.jp/english/reports/documents/jilpt-reports/no.12.pdf>.
- Nielsen, M. B., & Einarsen, S. (2012). Outcomes of exposure to workplace bullying: A meta-analytic review. *Work & Stress, 26*(4), 309–332.
- Pai, H. C., & Lee, S. (2011). Risk factors for workplace violence in clinical registered nurses in Taiwan. *Journal of Clinical Nursing, 20*(9–10), 1405–1412.
- Parent-Thirion, A., Vermeylen, G., van Houten, G., Lyly-Yrjänäinen, M., Biletta, I., & Cabrita, J. (2012). Fifth European working conditions survey—overview report (pp. 57–59).
- Park, S. (2013). Workplace bullying and harassment *JILPT report, no. 12*, pp. 91–112.
- Pedersen, H., & Christiansen, R. (2005). *Violence or harassment at work*. Centre for Alternative Social Analysis (CASA). <http://www.eurofound.europa.eu/ewco/2005/09/DK0509NU03.htm>.

- Pien, L.-C., Cheng, Y.-W., Chen, I.-S., & Chen, C.-J. (2014). The prevalence of workplace violence and its Association with the health status of Taiwanese employees. *Taiwan Journal of Public Health, 33*(1), 36–50 (in Chinese).
- Pien, L. C., Chen, D. R., Chen, C. J., Liang, K. M., & Cheng, Y. (2015). Associations of neighborhood-level workplace violence with workers' mental distress problems: A multilevel analysis of Taiwanese employees. *Journal of Occupational Health, 57*, 555–564.
- Roche, M., Diers, D., Duffield, C., & Catling-Paull, C. (2010). Violence toward nurses, the work environment, and patient outcomes. *Journal of Nursing Scholarship, 42*(1), 13–22.
- Takaki, J., Taniguchi, T., Fukuoka, E., Fujii, Y., Tsutsumi, A., Nakajima, K., et al. (2010). Workplace bullying could play important roles in the relationships between job strain and symptoms of depression and sleep disturbance. *Journal of Occupational Health, 52*(6), 367–374.
- Tsuno, K., Kawakami, N., Tsutsumi, A., et al. (2015). Socioeconomic determinants of bullying in the workplace: A national representative sample in Japan. *PLoS One, 10*(3), e0119435.
- Venema, A., & Klauw, M. V. D. (2012). *Impact of workplace violence on employees*. European Working Conditions Observatory, EWCO. <http://eurofound.europa.eu/observatories/eurwork/articles/other/impact-of-workplace-violence-on-employees>.