科技部補助專題研究計畫成果報告
期末報告

企業職場女性的經期健康相關研究(A01)

計 畫 類 別 ：個別型計畫
計 畫 編 號 ：MOST 103-2629-B-214-002-
執 行 期 間 ：103 年 08 月 01 日至 104 年 10 月 31 日
執 行 單 位 ：義守大學健康管理學系

計 畫 主 持 人 ：蔡夙穎

計畫參與人員：大專生-兼任助理人員：許雅欣
大專生-兼任助理人員：蕭郁臻

處 理 方 式 ：
1.公開資訊：本計畫涉及專利或其他智慧財產權，2 年後可公開查詢
2.「本研究」是否已有嚴重損及公共利益之發現：否
3.「本報告」是否建議提供政府單位施政參考：否

中 華 民 國 104 年 09 月 20 日

中 文 摘 要 ： 過去很少有研究專注在職場女性在經期不適的相關研究且去探討經期不適對女性員工健康的影響。本研究主要目的為探討育齡女性職工的經期不適之盛行率及去探討是否有運動習慣此一特質的生活方式與降低經前綜合症的嚴重程度是否有所關連。本研究使用問卷調查來收集相關資料，包含收集人口學相關資料、個人生活方式、月經的相關狀況，自評月經疼痛的得分和自評經期不適的相關症狀。

本研究共有 7193 位女性職工完成此次問卷的調查，研究結果發現，有 50.7%的參與者自述其月經週期並不規律，79.4%的參與者其月經之經血量為中等，而經期來時經期不適感對工作有小部分的影響者佔 50.2%。在經期不適的生理症狀上，前三高的症狀依序為「易感疲勞佔（24%）」、「感到腰酸佔（21.2%）」、「腹脹（17.4%）」。而女性職工中有規律運動習慣者，其在經期來時感受到的身體症狀及心理症狀較少，例如腰酸(OR = 0.78）、身體不適（OR = 0.77）、頭痛（OR = 0.82）、腹瀉（OR = 0.75）、便秘（OR = 0.59）、煩躁（OR = 0.76）、感到鬱悶和沮喪（OR = 0.74）、哭鬧（OR = 0.53）、並且情緒不穩定（OR = 0.73）。有固定運動習慣者，其在經痛指數的自評分數上也較低（OR = 0.85，95%CI= 0.76-0.96）。
我們的研究結果提供了對女性職工在經期不適上的了解狀態，這些數據也可提供企業在職場中去發展經前的健康計劃，以改善女性職工的健康和生活質量。

中文關鍵詞： 女性職工，經前症候群(或經期不適)、運動習慣

英 文 摘 要 ： Few studies have focused on the effects of premenstrual syndrome (PMS) in employee health. This study explored the prevalence of PMS in female employees of reproductive age and examined whether regular exercise habits are associated with decreased PMS severity. Questionnaires were designed to collect information on demographics, personal lifestyle, menstrual status, menstrual pain scores, and self-reported premenstrual symptoms.
A total of 7193 completed questionnaires were analyzed. Irregular menstruation was reported by 50.7% of participants, a moderate menstruation amount was reported by 79.4%, and little impact of menstrual pain at work was reported by 50.2%. In order of

prevalence, symptoms were “easy to fatigue” (24%), “backache” (21.2%), and “abdominal bloating” (17.4%). Female workers with a regular exercise habit reported fewer physical symptoms, including less backache (odds ratio [OR]=0.78), somatic discomfort (OR=0.77), headache (OR=0.82), diarrhea (OR=0.75), and constipation (OR=0.59), and fewer psychologic symptoms, including irritability (OR=0.76), feeling morose and depressed (OR=0.74), crying (OR=0.53), and emotional lability (OR=0.73). A regular exercise habit was associated with a decreased risk of menstrual pain (OR=0.85, 95% CI=0.76-0.96).
Our findings provide a better understanding of PMS in female workers, allowing for the development of premenstrual health programs for female workers to improve their health and quality of life.

英文關鍵詞： female employee； premenstrual syndrome； exercise habit

附件一

科技部補助專題研究計畫成果報告

（□期中進度報告/■期末報告）

企業職場女性的經期健康相關研究(A01)

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計畫主持人：蔡夙穎

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1. 公開方式：

□非列管計畫亦不具下列情形，立即公開查詢

■涉及專利或其他智慧財產權，□一年■二年後可公開查詢

2.「本研究」是否已有嚴重損及公共利益之發現：■否 □是

3.「本報告」是否建議提供政府單位施政參考 ■否 □是，____（請列舉提供之單位；本部不經審議，依勾選逕予轉送）

中　華　民　國 104 年 10 月 31 日

摘要

過去很少有研究專注在職場女性在經期不適的相關研究且去探討經期不適對女性員工健康的影響。本研究主要目的為探討育齡女性職工的經期不適之盛行率及去探討是否有運動習慣此一特質的生活方式與降低經前綜合症的嚴重程度是否有所關連。本研究使用問卷調查來收集相關資料，包含收集人口學相關資料、個人生活方式、月經的相關狀況，自評月經疼痛的得分和自評經期不適的相關症狀。

本研究共有 7193 位女性職工完成此次問卷的調查，研究結果發現，有 50.7%的參與者自述其月經週期並不規律，79.4%的參與者其月經之經血量為中等，而經期來時經期不適感對工作有小部分的影響者佔 50.2%。在經期不適的生理症狀上，前三高的症狀依序為「易感疲勞佔（24%）」、「感到腰酸佔（21.2%）」、「腹脹（17.4%）」。而女性職工中有規律運動習慣者，其在經期來時感受到的身體症狀及心理症狀較少，例如腰酸(OR = 0.78）、身體不適（OR = 0.77）、頭痛（OR = 0.82）、腹瀉（OR = 0.75）、便秘（OR = 0.59）、煩躁（OR = 0.76）、感到鬱悶和沮喪（OR = 0.74）、哭鬧（OR = 0.53）、並且情緒不穩定（OR = 0.73）。有固定運動習慣者，其在經痛指數的自評分數上也較低（OR = 0.85，95%CI= 0.76-0.96）。
我們的研究結果提供了對女性職工在經期不適上的了解狀態，這些數據也可提供企業在職場中去發展經前的健康計劃，以改善女性職工的健康和生活質量。

關鍵字:女性職工，經前症候群(或經期不適)、運動習慣

Abstract

Few studies have focused on the effects of premenstrual syndrome (PMS) in employee health. This study explored the prevalence of PMS in female employees of reproductive age and examined whether regular exercise habits are associated with decreased PMS severity. Questionnaires were designed to collect information on demographics, personal lifestyle, menstrual status, menstrual pain scores, and self-reported premenstrual symptoms.

A total of 7193 completed questionnaires were analyzed. Irregular menstruation was reported by 50.7% of participants, a moderate menstruation amount was reported by 79.4%, and little impact of menstrual pain at work was reported by 50.2%. In order of prevalence, symptoms were “easy to fatigue” (24%), “backache” (21.2%), and “abdominal bloating” (17.4%). Female workers with a regular exercise habit reported fewer physical symptoms, including less backache (odds ratio [OR]=0.78), somatic discomfort (OR=0.77), headache (OR=0.82), diarrhea (OR=0.75), and constipation (OR=0.59), and fewer psychologic symptoms, including irritability (OR=0.76), feeling morose and depressed (OR=0.74), crying (OR=0.53), and emotional lability (OR=0.73). A regular exercise habit was associated with a decreased risk of menstrual pain (OR=0.85, 95% CI=0.76-0.96).

Our findings provide a better understanding of PMS in female workers, allowing for the development of premenstrual health programs for female workers to improve their health and quality of life.

Keywords: female employee; premenstrual syndrome; exercise habit

INTRODUCTION

Premenstrual syndrome (PMS) is a generic term that includes a broad group of psychosomatic symptoms or disorders that occur for several days to weeks before menses and subside following the menstrual period (Freeman 2003). Premenstrual syndrome is a common disorder in women of reproductive age. Previous research indicated that up to 80% of women experience at least one premenstrual symptom during their menstrual cycle (Wittchen et al. 2002), but are still able to function normally at work and at home. Severe menstrual symptoms can significantly impact the quality of life for the affected women, interfering with school, employment, interpersonal relationships, and family and social life (Heinemann et al. 2012; Rapkin and Winer 2009), and leading to increased healthcare utilization and decreased occupational productivity (Borenstein 2003). The extreme and predominantly psychologic form of PMS is called premenstrual dysphoric disorder (PMDD) (Freeman 2003). Based on different definitions, methodology, and study objective populations, the prevalence of PMS differs from that of PMDD. The 2007 Swiss Nationwide Health Survey (Tschudin, Bertea, and Zemp 2010) indicated that 91% of Swiss women aged 15 to 54 years reported at least one symptom; 10.3% had PMS and 3.1% fulfilled the criteria for PMDD. In a Chinese population-based study (Qiao et al. 2012), among women aged 18-45 years, the incidence of PMDD was 2.1% and that of PMS was 21.1%, with the most common symptoms being irritability, breast tenderness, depression, abdominal bloating, and angry outbursts. In a Japanese study, as many as 95% of Japanese women between the ages of 20 and 49 years who were seen at a clinic for uterine cancer screening (Takeda et al. 2006) reported premenstrual symptoms, and the prevalence rate of moderate and severe PMS and PMDD was 5.3% and 1.2%, respectively.

Some clinicians still do not accept PMS as a serious clinical condition and are unsympathetic toward the affected women (Futterman and Rapkin 2006). All women, regardless of race, age, or socioeconomic status, have experience troubles caused by discomfort related to menstrual periods. Females with PMS report a poorer perceived quality of sleep (Baker et al. 2007) and health-related quality of life (Futterman and Rapkin 2006; Heinemann et al. 2012; Rapkin and Winer 2009), and PMS may result in a depressed mood and greater psychiatric comorbidity (Reed, Levin, and Evans 2008). The negative impact of PMS on working women contributes to decrease their occupational productivity and interfere with their employment status and

interpersonal relationships (Heinemann et al. 2012; Rapkin and Winer 2009). Painful menstrual periods or PMS are the most common gynecologic problems and may lead female workers to take leave. Few population-based studies, however, have focused on this issue among working women of reproductive age. The aim of the present study was to investigate the prevalence of PMS in female employees of reproductive age. In this study, we postulated that female employees with a regular exercise habit would have fewer PMS symptoms. The results will contribute to our understanding of the current status of a menstrual health-friendly workplace environment for female employees and can be used to establish a model for a healthy lifestyle with a regular exercise habit to decrease the negative impact of PMS.

SUBJECTS and METHODS

Research setting and subjects

This was a cross-sectional survey of PMS among employed female workers in a large electronics manufacturer in Taiwan. The study was conducted from August 2014 to December 2014 using a sample of employed female workers aged 18 to 55 years who were seen at a regular employee health check.

The research setting was Company C, a large electronics manufacturer with high labor-intensive employees in the Tainan Science Park in Southern Taiwan, which is one of the Taiwan's largest areas for electronics manufacturers. This company has about 19,000 employees, 41% of whom were female in 2014. Company C was selected for the study setting upon consideration of company size and stability. In addition, this company has many female employees of reproductive age. Therefore, we consider this a representative sample of female employees with respect to collecting data on the prevalence of PMS in the workplace. Because company C has many female workers, the employer and director of health management pay attention to female employee's premenstrual disorder and the negative impact of PMS on occupational productivity and attendance; thus, Company C was willing to provide assistance in administering this survey.

The researchers inquired about the willingness of this company to participate in the study by first sending an explanatory letter about the research project, and then visiting the employee health management department director of the company to explain the purpose of the research. After obtaining consent from the employee health management department, occupational and environmental health nurses helped distribute and

collect the questionnaires during an employee health check. Questionnaires were used to collect data on demographics, personal lifestyle and behavior, menstrual status, menstrual pain scores, and self-reported premenstrual symptoms.

This study invited all eligible employed women who attended a regular employee health check (n=7299) and obtained their informed consent before the health check. A total of 7193 valid questionnaires were collected, with a response rate of 93%. This study was approved by the Institutional Review Board of E-Da Hospital (Taiwan).

Assessment Instruments and Definitions

Mean time required to complete the survey was 8 min.

1. Demographics, personal lifestyle and behavior, and employment status

Participants' self-reported demographics, personal lifestyle and behavior, and employment status was assessed. Regular exercise was initiated or/and maintained during the month prior to the investigation. 'Exercise' was defined as that during which the subject breathes deeply or perspires, and was categorized as no exercise habit, 1 time average month, 2-3 times average month, 1-2 times average week, and ≥3 times average every day. The participants were asked questions about their water intake per day (<1000 cc, 1000-1500 cc, 1501-2000 cc, and >2000 cc). Drinking ice-cold drinks was categorized as a habit of usual consumption (frequency of consumption was more than 3 times a week) or of occasional consumption (frequency of consumption was 1 time per week) and habit of seldom consumption (or frequency of consumption was below 1 time per week).

The female employees were office workers or clean-room workers (a room that is maintained virtually free of contaminants, used in laboratory work and in the production of precision parts for electronic equipment). Employment status was collected, including worksite (office vs. clean room), and shift work ("Do you perform shift work?" yes/no).

2. Menstrual status, menstrual pain scores, and self-reported premenstrual symptoms

Menstrual status information pertaining to age at menarche, menstrual regularity (cycle regularity), menstrual cycle, duration of the menstrual cycle, menstrual quantity (little, moderate, or heavy flow), self-reported perception of the impact of menstrual pain on work (no impact, little, moderate, and great), and menstrual pain scores using a visual analgesic scale (0-100 score). Analgesics usage within the last 6 months was collected. Women were also asked how many days menstrual pain interfered with normal life and activities

(during the past 1 month, how many days did menstrual pain interfere with your normal life and activity?). The questionnaires included screening questions regarding self-reported 25 premenstrual symptoms within 6 months (19 physical premenstrual symptoms and 5 psychologic premenstrual symptoms) and asked participants to rate the severity of premenstrual symptoms as “not at all,” “mild,” “moderate”, or “severe”. We divided participants with premenstrual symptoms into two groups: “moderate to severe premenstrual symptoms” and “ no/mild premenstrual symptoms”.

Statistical Analysis

This study estimated the prevalence of self-reported premenstrual symptoms among female employees and explored the association between moderate or severe PMS and exercise habit. All analyses were performed using Statistical Analysis System (SAS 9.3; SAS Institute, Cary, NC) software. Descriptive characteristics of the participants and of menstruation are shown in **Table 1** and **Table 2**. Data are expressed as the mean±SD and percentage. The association of exercise habit with self-reported premenstrual symptoms was estimated using a chi-square test. A P value of less than 0.05 was considered statistically significant. Exercise habit variables associated with self-reported moderate or severe premenstrual symptoms with a level of significance of $P \leq 0.05$ in a chi-square analysis were considered in the multivariate modeling (Table 4). Exercise habit was defined as regular exercise averaging at least once a week. Estimated impact odds ratio (ORs) and 95% confidence interval (95% CIs) of exercise habit on self-reported moderate or severe premenstrual symptoms and menstrual pain were used in multiple logistics regression.

Results

A total of 7193 employed female workers completed the questionnaire. Mean age of the participants was 33.4±5.2 years. Characteristics of the study participants are presented in **Table 1**. Most of the participants (62.5%) were between 31 to 40 years of age, and 31.4% had no regular exercise habit. In addition, many of the female employed workers (46.2%) reported drinking less than 1000 cc water per day and 55.2% reported drinking ice-cold drinks other than water daily. Shift workers comprised 30.8% and clean-room workers comprised 60.2%.

The characteristics of menstruation among study participants are shown in **Table 2**. The large majority (90.1%) of participants were 11 to 15 years old at menarche (mean age of menarche was 13.4±1.5 years).

Irregular menstruation was reported by 50.7% participants. Only 34.3% reported a menstruation interval of 1 month. The mean duration of menstruation was 5.8±1.3 days. Moderate menstrual flow was reported by 79.4% participants, and 50.2% participants reported little impact of menstrual pain on work. Menstrual pain scores above 80 based on a visual analogue scale were reported by 4.7% participants . Analgesics to relieve menstrual pain during every menstruation were taken by 5.8%, while 2.0% participants reported that menstruation interfered with their normal life activity 3 or more days during the past 1 month.

The prevalence of each self-reported moderate or severe premenstrual symptom is shown in **Table 3**. The order of prevalence of the symptoms was “easy to fatigue” (24%), “backache” (21.2%), and “abdominal bloating” (17.4%). A regular exercise habit was significantly correlated with decreased prevalence of five physical symptoms, including backache (P=0.0001), somatic discomfort (P=0.0027), headache (P=0.0413), diarrhea (P=0.0030), and constipation (Fisher’s exact test for P=0.0001), and four psychologic symptoms, including irritability (P=0.0018), feeling depressed (P=0.0104), crying (Fisher’s exact test for P=0.0260), and emotional lability (P=0.0034).

The results of the multiple logistic regression analysis estimating the impact of regular exercise on self-reported moderate or severe premenstrual symptoms and menstrual pain are shown in **Table 4**. Female workers reporting a regular exercise habit reported decreased prevalence of physical symptoms, such as backache (OR=0.78, 95% CI=0.67-0.90), somatic discomforts (OR=0.77, 95% CI=0.63-0.95), headache (OR=0.82, 95% CI=0.69-0.97), diarrhea (OR=0.75, 95% CI=0.59-0.94), and constipation (OR=0.59, 95% CI=0.44-0.78), and decreased prevalence of psychologic symptoms, such as irritability (OR=0.76, 95% CI=0.63-0.92), feeling morose and depressed (OR=0.74, 95% CI=0.58-0.94), crying (OR=0.53, 95% CI=0.28-0.90), and emotional lability (OR=0.73, 95% CI=0.58-0.91) after adjusting for age, worksite, and shift work. After controlling for these factors, a regular exercise habit was associated with a decreased risk of menstrual pain (OR=0.85, 95% CI=0.76-0.96).

DISCUSSION

The findings of the present study indicated that the most prevalent self-reported moderate and severe physical symptoms were easy to fatigue (24%), backache (21.2%), and abdominal bloating (17.4%), while the most prevalent psychologic symptoms were irritability (12.2%) and emotional lability (8.5%). The high prevalence

of physical premenstrual symptoms in female workers deeply negatively impacted their health-related quality of life and decreased occupational productivity. Previous studies revealed that PMS was associated with a poorer quality of sleep and higher possible psychiatric morbidity (Cheng et al. 2013; Kim et al. 2004; Wittchen et al. 2002), and increased utilization of healthcare (Borenstein et al. 2007; Wittchen et al. 2002). In our study, 5.8% participants reported the need for analgesics every month during menstruation to relieve menstrual pain and 4.7% scored their menstrual pain higher than 80. Moreover, 2% of the participants revealed that menstrual pain deeply interfered with their normal life and activities at least 3 days per cycle/month. Overall, ~18.6% participants reported moderate and severe impact of menstrual pain on work. These data indicate that the physical and/or emotional symptoms associated with PMS might negatively affect a woman's quality of life and occupational productivity.

Most women experience premenstrual symptoms during their menstrual cycle, but are still able to function normally at work. Hence, female workers pay attention to physical symptoms and might ignore emotional disabilities. Some women, however, experience moderate or severe symptoms that are emotionally disabling, particularly in the area of personal relationships and social activities (Borenstein et al. 2003). Based on our findings, female workers reported experiencing irritability, emotional lability, and a depressed mood. These psychologic symptoms can interfere with interpersonal relationships, social interactions, and emotional well-being in the workplace. One Iranian study investigated PMS in a group of female medical students using the Diagnostic and Statistical Manual of Mental Disorders, 4th edition premenstrual dysphoric disorder /PMS criteria and its effect on health-related quality of life that was determined using the World Health Organization Quality of Life-BREF questionnaire. They reported that quality of life, especially in psychologic and social domains, was low in more than half of the female medical students and quality of life score in mental health and environmental health domains decreased as the mean PMS score increased (Farrokh-Eslamlou et al. 2015). A similar study comparing SF-36 scores between female students with and without PMDD found significant differences between these two groups in all measures ($P < 0.001$), except for physical functioning. These differences were more evident in the emotional, physical, and social function domains, and bodily pain (Delara et al. 2012). A Swiss population-based health survey revealed that 57% women reported having at least a mild degree of "anger/irritability" or "tearfulness/mood swings"; the median duration of physical and emotional symptoms was 3 days, and women felt most bothered in their relationship with co-workers and/or

family (Tschudin, Bertea, and Zemp 2010). As mentioned above, women focused on physical symptoms might depend on analgesics while at work, but might ignore their emotional well-being. Moreover, previous studies investigating female students demonstrated that health-related quality of life of mental and social domains decrease when PMS syndromes increase, which may affect work efficiency. Our data suggest that employers should establish friendly menstrual health programs and provide support for female employee in the workplace to improve the quality of life for female workers, especially those who suffer from moderate or severe PMS.

In the present study, only 21.2% female workers reported having a regular exercise habit. That is, 78.8% female workers not only do not exercise regularly, but also ignore the benefit of regular exercise. Moreover, 81.6% female workers drink too little water (<1000 cc=46.2% and 1000-1500 cc=35.4%) and the water consumption per day does not meet current recommendations. More than half of the participants (55.2%) drink other ice-cold drinks instead of water. These data demonstrated that our participants did not have proper health knowledge and practice bad habits in their daily life. Our study examined the association between exercise habit and PMS in female workers and indicated that a regular exercise habit might be associated with a decrease in some physical and psychologic PMS symptoms. Moreover, menstrual pain might decrease with regular exercise. Most previous studies (Bertone-Johnson et al. 2008; Cohen et al. 2002; El-Lithy et al. 2015; Masho, Adera, and South-Paul 2005; Potter et al. 2009; Samadi, Taghian, and Valiani 2013; Tschudin, Bertea, and Zemp 2010; Wittchen et al. 2002; Wu et al. 2015) discussed the association between health behavior and PMS. Previous studies revealed that former, but not current, smoking, as well as current smoking are associated with a higher incidence of PMS (Bertone-Johnson et al. 2008; Cohen et al. 2002; Tschudin, Bertea, and Zemp 2010; Wittchen et al. 2002). High body mass index is also demonstrated to be associated with PMS in various studies (Masho, Adera, and South-Paul 2005; Potter et al. 2009; Tschudin, Bertea, and Zemp 2010). A recent study indicated that aerobic exercise increases hemoglobin, hematocrit, red cell count, and platelet count, and decreases levels of prolactin, estradiol, and progesterone, leading to improvement of symptoms such as fatigue, impaired concentration, confusion, and most other symptoms (El-Lithy et al. 2015). One study (Wu et al. 2015) demonstrated that women with PMS participating in a short-term yoga exercise in the luteal phase makes them feel better and improves attention. A quasi-experimental study demonstrated that the

mean scores of PMS and symptoms declined after 8 weeks of aerobic exercise training in the experimental group and suggested that 8 weeks of aerobic exercise effectively reduces the symptoms of PMS and can be used as a treatment (Samadi, Taghian, and Valiani 2013). Based on our data, the understanding of the benefits of a regular exercise habit in the workplace is insufficient, and these findings may be applied to further our understanding of the role of health behavior during menstruation.

Our study has some limitations. First, the study was cross-sectional in design; therefore, temporal relations could not be assessed, and only associations, not causation, could be evaluated. Second, our assessment of independent factors using a dichotomized classification was perhaps overly simplistic. Third, factor measurements mainly relied on self-report, which might have resulted in a social acceptability bias. Fourth, questions of personal lifestyle and perceived self-reported premenstrual symptoms in the questionnaire were developed for this study and could have resulted in the misclassification of information and lack of comparability of results to those studies using standard instruments. Nevertheless, female workers with a regular exercise habit reported fewer physical premenstrual symptoms, including backache, somatic discomforts, headache, diarrhea, and constipation, and fewer psychologic premenstrual symptoms, including irritability, feeling morose and depressed, crying, and emotional lability after adjusting for age, worksite, and shift work. Regular exercise was associated with a decreased risk of menstrual pain. Workplaces and employers can help female workers to understand the benefits of regular exercise, which may decrease premenstrual distress and improve the health of female workers.

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Table 1: Descriptive characteristics of 7193 employee study participants

Variable		Number	%
Age, years	18-20	20	0.3
33.4(5.2) (19-55)	21-30	2031	28.2
	31-40	4500	62.5
	41+	642	9.0
Exercise habit	No exercise habit	2261	31.4
	1 time/average month	1862	25.9
	2-3 times/average month	1546	21.5
	1-2 times/average week	1205	16.7
	≥3 times/average week	319	4.5
Drink Water	<1000 cc	3319	46.2
	1000-1500 cc	2548	35.4
	1501-2000 cc	1003	13.9
	>2000 cc	323	4.5
Drinking other ice-cold drinks	Usually	3975	55.2
	Occasionally	2185	30.4
	Seldom	1033	14.4
Shift work	No	4981	69.2
	Yes	2212	30.8
Worksite	Clean room	4329	60.2
	Office	2864	39.8

Table 2: Characteristics of menstruation among 7193 employee study participants

Variables	Mean±SD, N (%)
Age at menarche	13.4±1.5 (range 9-20)
9-10 years old	95 (1.3%)
11-15 years old	6482 (90.1%)
>15 years old	616 (8.6%)
Menstruation regularity	
Regular	3543 (49.3%)
Irregular	3650 (50.7%)
Menstruation interval (days)	
<28 days	3612 (50.2%)
Once a month	2469 (34.3%)
1-2 months	1112 (15.5%)
Menstrual period (days)	5.8±1.3 (range 1-15)
Menstruation amount	
Little	980 (13.6%)
Moderate	5710 (79.4%)
Heavy	503 (7.0%)
Impact of menstrual pain on work	
No	2245 (31.2%)
Little	3612 (50.2%)
Moderate	1129 (15.7%)
Great	207 (2.9%)
Menstrual pain scores (0-100 score, Visual analogue scale)	
80-100	337 (4.7%)
50-79	2765 (38.4%)
<50	4091 (5.8%)
Analgesics used	
Do not take	5241 (72.9%)
Take medicine (occasionally)	1533 (21.3%)
Take medicine (every month during menstruation)	419 (5.8%)
During the past 1 month, how many days did menstrual pain interfere with your normal life and activity?	
0 days	5836 (81.1%)
1-2 days	1217 (16.9%)
3 or more days	140 (2.0%)

Table 3: Self-reported moderate or severe frequency of premenstrual syndromes among 7193 employee study participants and exercise habit by moderate or severe symptoms.

Variables	Self-reported moderate or severe PMS symptoms			
	Total (%)	Exercise habit		P-value for Chi-square test
		Yes*	No	
Physical symptoms				
Muscle stiffness	5.0	4.1	5.3	0.0637 (Fisher's exact test)
Faintness	1.1	1.1	1.0	0.8931 (Fisher's exact test)
Abdominal swelling	17.4	16.7	17.3	0.3640
Dizziness, fuzzy version	6.0	6.1	6.0	0.9954
Breast tensions	9.7	8.8	9.9	0.2217
Easy to fatigue	24.0	23.1	24.2	0.3549
Abdominal cramps	12.4	11.4	12.7	0.1747
Leg swelling	8.2	8.9	8.0	0.2470
Backache	21.2	17.6	22.1	0.0001
Somatic discomforts	9.9	7.9	10.5	0.0027
Headache	13.9	12.3	14.3	0.0413
Palpitation	3.0	2.3	3.2	0.0890 (Fisher's exact test)
Skin allergies, itch	8.6	7.4	8.9	0.0793
Cold sweats	3.5	3.5	3.4	0.8126 (Fisher's exact test)
Nausea, vomiting	3.2	3.1	3.2	0.9342 (Fisher's exact test)
Hot flashes	2.0	2.1	1.9	0.6026 (Fisher's exact test)
Diarrhea	7.8	5.9	8.2	0.0030
Constipation	6.0	3.8	6.5	0.0001 (Fisher's exact test)
Weight gain	6.6	6.2	6.7	0.4693
Psychologic symptoms				
Irritability	12.2	9.9	12.9	0.0018
Feeling depressed	7.2	5.7	7.6	0.0104
Crying	1.6	0.9	1.7	0.0260 (Fisher's exact test)
Tension	3.6	3.2	3.7	0.3516 (Fisher's exact test)
Emotional lability	8.5	6.6	9.0	0.0034

*a regular exercise habit indicates that participants perform regular exercise at least once a week on average every week.

Table 4: Estimated impact (ORs and 95% CIs) of exercise habit on self-reported moderate or severe premenstrual symptoms and menstrual pain among 7193 employee study participants.

Variables	Exercise habit (Yes/no)	
	Crude OR (95% CI)	Adjusted OR* (95%CI)
Self-reported Premenstrual symptoms		
(moderate or Severe)		
1.Physical symptoms		
Backache	0.75 (0.64-0.86)	0.78 (0.67-0.90)
Somatic discomforts	0.73 (0.59-0.89)	0.77 (0.63-0.95)
Headache	0.83 (0.70-0.99)	0.82 (0.69-0.97)
Diarrhea	0.70 (0.56-0.89)	0.75 (0.59-0.94)
Constipation	0.56 (0.42-0.75)	0.59 (0.44-0.78)
2.Psychologic symptoms		
Irritability	0.74 (0.61-0.89)	0.76 (0.63-0.92)
Feeling morose and depressed	0.73 (0.57-0.93)	0.74 (0.58-0.94)
Crying	0.52 (0.30-0.92)	0.54 (0.29-0.91)
Emotional lability	0.71 (0.57-0.89)	0.73 (0.58-0.91)
Menstrual pain scores		
(>50 scores vs <50 scores)	0.76 (0.68-0.86)	0.85 (0.76-0.96)

*Adjusted for age, worksite, and shift work.

附件二

科技部補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現（簡要敘述成果是否有嚴重損及公共利益之發現）或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估

■達成目標

□ 未達成目標（請說明，以 100 字為限）

□ 實驗失敗

□ 因故實驗中斷

□ 其他原因

說明：

2. 研究成果在學術期刊發表或申請專利等情形：

論文：□已發表 □未發表之文稿 □撰寫中 □無 ■正在投稿審閱中

專利：□已獲得 □申請中 □無

技轉：□已技轉 □洽談中 □無

其他：（以 100 字為限）

3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性），如已有嚴重損及公共利益之發現，請簡述可能損及之相關程度（以 500 字為限）

瞭解國內電子相關職場的女性經期不適盛行狀況，此研究數據或結果將可提供未來職場在推行經期健康促進課程及設計上的參考，期望能對經痛不適的研究領域上能有所助益。

科技部補助計畫衍生研發成果推廣資料表

日期:2015/09/16

科技部補助計畫	計畫名稱: 企業職場女性的經期健康相關研究(A01)
	計畫主持人: 蔡夙穎
	計畫編號: 103-2629-B-214-002- 學門領域: 性別主流科技計畫

無研發成果推廣資料

103 年度專題研究計畫研究成果彙整表

計畫主持人：蔡夙穎	計畫編號：103-2629-B-214-002-
計畫名稱：企業職場女性的經期健康相關研究(A01)	

成果項目			量化			單位	備註（質化說明：如數個計畫共同成果、成果列為該期刊之封面故事...等）
			實際已達成數（被接受或已發表）	預期總達成數(含實際已達成數)	本計畫實際貢獻百分比		
國內	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	0	0	100%		
		專書	0	0	100%		
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（本國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		
國外	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	0	0	100%		
		專書	0	0	100%	章/本	
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（外國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		

其他成果 (無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。)	本研究目前投稿至國外期刊 Women&Health 中。

	成果項目	量化	名稱或內容性質簡述
科教處計畫加填項目	測驗工具(含質性與量性)	0	
	課程/模組	0	
	電腦及網路系統或工具	0	
	教材	0	
	舉辦之活動/競賽	0	
	研討會/工作坊	0	
	電子報、網站	0	
	計畫成果推廣之參與（閱聽）人數	0	

科技部補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估 ■達成目標 □未達成目標（請說明，以 100 字為限） □實驗失敗 □因故實驗中斷 □其他原因 說明：
2. 研究成果在學術期刊發表或申請專利等情形： 論文：□已發表 □未發表之文稿 ■撰寫中 □無 專利：□已獲得 □申請中 ■無 技轉：□已技轉 □洽談中 ■無 其他：（以 100 字為限） 無
3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）（以 500 字為限） 瞭解國內電子相關職場的女性經期不適盛行狀況，此研究數據或結果將可提供未來職場在推行經期健康促進課程及設計上的參考，期望能對經痛不適的研究領域上能有所助益。