

Original article

Work stress and drug use behaviors for stress relief of medical representatives in Bangkok Metropolitan

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Abstract

Background: In 2021, the Department of Mental Health Thailand, found that 9.4% of Thais experience stress, with the highest rates in Bangkok at 14.1%, primarily attributed to work-related stress. One of the top 10 professions with the highest stress levels is medical representatives.

Objectives: To study work-related stress and medication usage behaviors among pharmaceutical representatives in Bangkok and its suburbs, including factors influencing these behaviors and the correlation between stress levels and medication usage behaviors.

Methods: Online data were collected from medical representatives responsible for Bangkok and its suburbs, aged ≥ 22 years, totaling 330 individuals. The study utilizes a questionnaire covering 1) personal information, 2) assessment of stress perceptions related to work factors, and 3) evaluation of stress-relieving medication usage behaviors.

Results: The majority of participants were female with an average age of 33 years. Among pharmaceutical representatives, two-thirds reported moderate stress levels, averaging 50.6%. Regarding behaviors related to stress-relief medication, a significant majority, 62.8%, exhibited good practice. This study showed a significant positive correlation between drug use behaviors and stress levels among participants ($P < 0.001$).

Conclusion: Medical representatives in Bangkok and its metropolitan area exhibit an average stress level score of 50.6 out of 100, with two-thirds reporting moderate to high stress levels related to work factors. Additionally, two-thirds of them demonstrate favorable behaviors towards using stress-relief medication. Specifically, 62.8% engage in these behaviors at a good level.

Keywords: Drug use behaviors, medical representative, stress.

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Stress is a common emotional response that prepares the body to cope with various challenges. It can occur at anytime and anywhere. When stress becomes chronic and unmanageable, it can lead to a buildup of negative effects. Stress can manifest in various ways, including physical symptoms (i.e., headaches, rapid heartbeat, nausea, vomiting), psychological symptoms (i.e., anxiety, forgetfulness), emotional symptoms (i.e., irritability, depression), and behavioral changes (i.e., irregular eating habits, smoking, alcohol abuse, sleep disturbances). In severe cases, stress can even lead to apathy and chronic irritability. Today, stress is widely recognized as a significant global issue affecting people from all walks of life. The primary causes of stress are attributed to lifestyle and work-related factors⁽¹⁾. A 2019 survey conducted in Thailand as a part of the 2019 Cigna 360 Well-Being Survey revealed that Thai people experience the fifth-highest levels of stress globally (out of 23 countries), primarily due to financial insecurity and work-related stress.⁽²⁾ In 2021, the Department of Mental Health Thailand, conducted a nationwide stress survey among 4,200 individuals, dividing the sample by region: North, Northeast, South, Central and East, and Bangkok. The results indicated that 9.2% of Thai people experience high levels of stress, with the highest prevalence observed in Bangkok (13.1%).⁽³⁾ In Bangkok, it ranks the 5th out of 100 cities worldwide where people work too hard, and over 15.1% of full-time employees work overtime for more than 48 hours per week. Bangkok was identified as a high-risk area requiring close monitoring.⁽⁴⁾ Additionally, data collected by the Health Promotion Foundation (Thai Health) between 2011 and 2016 revealed that private sector employees and general laborers experience the highest levels of stress. Furthermore, stress was found to contribute to suicidal ideation among 1 in 10 individuals experiencing stress. The data were collected from a diverse range of occupations, from manual laborers to corporate employees. The reasons for suicidal ideation stemmed from poor quality of life.

A study conducted by healthcare professionals at Cigna Global and a survey based on the “360-Degree Health and Well-being Assessment” found that 87.0% of the global workforce experiences work-related stress. In the Asian region, this figure rises to 12.0%, with a significant portion of the population unable to manage their stress effectively.⁽⁵⁾ According to a survey conducted by the Health Promotion Foundation (Thai Health), work-related stress is a prevalent issue affecting approximately 65.0% of workers. The factors contributing to stress can include weather

conditions, organizational policies, salary adjustments, competition for promotions in large organizations, misalignment between job duties and individual capabilities, and the nature of the work itself.⁽⁶⁾ Work-related stress can significantly impact personal health and family life. A survey found that half of all workers bring work home, reducing time spent with their children.⁽⁷⁾ Therefore, effective stress management strategies are crucial for reducing or eliminating stress. These strategies vary from person to person and can include positive coping mechanisms such as seeking support from others, practicing relaxation techniques, watching TV or movies, listening to music, exercising, engaging in religious activities, and so on. Conversely, some individuals may resort to negative coping mechanisms such as alcohol consumption, smoking, gambling, and verbal or physical aggression to vent their frustrations. These behaviors can jeopardize their own safety, the well-being of those around them, their coworkers, and even their family members. Studies have identified the 10 most stressful occupations as: information technology, medical personnel, engineers, sales and marketing, education, finance, human resources, operations manufacturing, administrative/clerical. The pharmaceutical industry is another form of employment that involves collaboration among various departments, potentially contributing to work-related stress.

One approach to managing stress involves the use of anti-anxiety medications. The 6th National Health Examination Survey of Thai People (2018 - 2019) conducted by Eakplakorn W.⁽⁸⁾ and his team examined health behaviors and basic measurable diseases among both working-age adults and the elderly. The findings revealed that 2.9% of individuals aged 15 and above regularly consumed anti-anxiety or sleep medications. Women were more likely to use these medications (3.4%) compared to men (2.5%). The primary source of anti-anxiety medications was healthcare facilities (80.1%), including hospitals, private clinics, and health centers. The remaining portion was obtained from pharmacies and general stores.

Medications play an indispensable role in maintaining human health and well-being. Individuals in Thailand obtain their medications from various sources, including public and private hospitals, clinics, and pharmacies. Pharmaceutical companies in Thailand employ sales representatives to promote their products to healthcare providers, particularly physicians. However, the medical representatives often encounter challenges in gaining access to

physicians and may have limited time for interactions due to the physicians' busy schedules.⁽⁹⁾

Stress-relieving medications, also known as anxiolytics, work by reducing the activity of certain neurotransmitters in the brain that are associated with anxiety and stress. These medications can be effective in providing short-term relief from symptoms such as restlessness, irritability, and difficulty sleeping. However, it is important to note that stress-relieving medications should only be used under the supervision of a healthcare provider, as they can have potential side effects and may lead to dependence if used for extended periods. Common types of stress-relieving medications include: 1) **Benzodiazepines**: These medications, such as diazepam and clonazepam, are effective in treating anxiety and insomnia. However, they can cause drowsiness and impair cognitive function, and long-term use can lead to dependence; 2) **Tricyclic antidepressants (TCAs)**: These medications, such as amitriptyline and imipramine, were initially developed as antidepressants but have also been found to be effective in managing anxiety and stress. They can cause side effects such as dry mouth, constipation, and blurred vision; 3) **Beta-blockers**: These medications, such as propranolol and atenolol, are primarily used to treat high blood pressure and heart disease. However, they can also be used to manage anxiety symptoms, particularly physical symptoms such as racing heart, trembling, and sweating. While the three groups of medications mentioned (benzodiazepines, tricyclic antidepressants, and beta-blockers) can all be used to relieve stress symptoms, it is important to recognize that they have different mechanisms of action, usage guidelines, and limitations. Therefore, it is not advisable to substitute one medication for another without proper consultation. Using these medications without proper guidance can lead to harmful side effects. The most important step is to consult a physician. They will conduct a thorough evaluation to identify the underlying cause of stress and determine the most appropriate treatment approach.⁽¹⁰⁾

The work of medical representatives can be demanding and stressful. They often face tight sales quotas, long working hours, and constant pressure to meet performance targets. Additionally, they may encounter challenges in gaining access to physicians and may have limited time for interactions due to the physicians' busy schedules. These factors can contribute to increased stress levels among medical representatives.⁽¹¹⁾

Given the prevalence of stress among medical representatives and the potential impact on their

medication use, this study aims to investigate the following: 1) **stress levels among medical representatives**: The study will assess the prevalence and severity of stress among medical representatives in Bangkok Metropolitan; 2) **medication use patterns among medical representatives**: The study will examine the types of medications used by medical representatives to manage stress, their frequency of use, and any potential concerns related to medication use 3) **factors associated with stress and medication use**: The study will explore the factors that contribute to stress among medical representatives and how these factors are related to their medication use patterns.

The findings of this study will provide valuable insights into the stress levels and medication use patterns among medical representatives in Thailand. This information can be used to develop effective interventions to promote the well-being of medical representatives and ensure their safe and appropriate use of medications.

Understanding the stress levels and medication use patterns among medical representatives is crucial for promoting their well-being and ensuring their ability to work effectively. This study aimed to provide a comprehensive understanding of these issues and inform the development of targeted interventions to support medical representatives.

Materials and methods

This study employed purposive sampling, utilizing a reference list of multinational pharmaceutical companies that are members of the Pharmaceutical Researchers and Manufacturers Association (PREMA). The target population was 1,200 pharmaceutical representatives working in the Bangkok Metropolitan. To determine the sample size, Yamane's formula was used, with an additional 10.0% allowance for error. This resulted in a sample size of 330 participants. To be eligible for the study, participants had to be employed by a pharmaceutical company, having worked in the Bangkok Metropolitan for at least 6 months, be 22 years of age or older, and be of either gender. Data collection was conducted online. All participants received an informed consent form via Google Forms and were given the option to voluntarily consent to participate in the study. In accordance with research ethics guidelines, participants were asked to provide their consent before completing the questionnaire. The questionnaire did not ask for names or places of employment to comply with the Personal Data Protection Act B.E. 2562 (2019). Participants self-administered the

questionnaire, which consisted of three sections: 1) demographic and other information, 2) assessment of perceived stress related to pharmaceutical sales representative work, and 3) assessment of stress-reducing medication use behaviors. This study has been approved by the Ethics Committee for Research in Human Subjects, Faculty of Medicine, Chulalongkorn University (IRB no. 0510/66).

Part 1: Personal information and other factors questionnaire This questionnaire consists of 29 items that gather information about the respondent's personal background and work experience as a pharmaceutical sales representative. The questionnaire utilizes a combination of closed-ended and open-ended questions. Closed-ended questions (18 items) These questions require respondents to select from a predetermined list of answer choices. The questions cover the following topics such as 1) age 2) total years of experience as a pharmaceutical sales representative 3) number of years working as a pharmaceutical sales representative at the current company 4) total number of pharmaceutical companies worked for (past and present) 5) expected duration of employment at the current company 6) number of vacation days taken in the previous four weeks. Open-ended questions (6 items)

Part 2: Assessment of stress levels in medical representatives This section consists of 20 closed-ended questions using a Likert scale response format. The questionnaire was developed by Titachote K.⁽¹⁾ (Assessment of stress levels related to occupational factors of pharmaceutical representatives) and has been validated against a standard Thai stress assessment tool. The scoring system is as follows such as 5 points for the highest level of stress 4 points for moderately high level of stress 3 points for moderate level of stress 2 points for Low level of stress, and 1 point for no stress. The total score for each individual is calculated by summing the scores for all 20 questions. The total score can range from 20 to 100 points. Based on the total score, the difference between the mean and standard deviation of the sample and the respondents are categorized into three levels of stress such as low level of stress for individuals with scores lower than the difference between the mean and standard deviation. Moderate level of stress for Individuals with scores within the range of the mean plus/minus the standard deviation. High level of stress for Individuals with scores higher than the mean plus the standard deviation.

Part 3: Stress medication use behavior questionnaire: The questionnaire consists of 23 closed-ended questions with multiple-choice options. It was developed and modified by researchers Amponratmanee P, and Kalayasiri R, based on the pain medication use behavior questionnaire by Kanika S. The term "stress medication" was substituted for "pain medication" in questions about stress medication use behavior, and the term "medication" was used in questions about medication use characteristics to allow those who do not use stress medication to answer these questions. Additionally, question 8 was changed from "forgetting to take medication" to "taking more medication than prescribed" to align with the behavior of using psychoactive medications. The questionnaire utilizes a 4-point rating scale: "always," "often," "sometimes," and "never." Questions are a mix of positive and negative statements. The questionnaire has been validated for reliability using Cronbach's Alpha Coefficient, which yielded a value of 0.710. The questionnaire consists of 23 questions, as follows: positive questions is questions 5, 7, 10, 17, 18, 22, 23; scoring Always for 3 points often for 2 points; sometimes for 1 point; never for 0 points; negative questions is questions 1 - 4, 6, 8, 9, 11 - 16, 19 - 21; scoring Always for 0 points; Often for 1 point; Sometimes for 2 points; never for 3 points. Interpretation: to interpret the results, the sum of the scores for each question is calculated, and the mean and standard deviation are determined. Mean score of 2.3 - 3.0: very good stress medication use behavior. Mean score of 1.8 - 2.3: good stress medication use behavior. Mean score of 0.8 - 1.8: moderate stress medication use behavior mean score of 0.0 - 0.8: needs improvement in stress medication use behavior.

Statistical analysis

This research analysis utilized statistical software, IBM SPSS Statistics (version 29.0.1), to examine relationships between stress, drug use behaviors for stress relief, and other variables. Descriptive statistics, including frequency distributions, percentages, means and standard deviations (SD), were employed. Inferential statistics were then used to delve deeper. Unpaired student *t*-tests or one-way ANOVA were used to assess these relationships. Pearson's correlations were employed to determine the strength and direction of the association between stress and drug use behaviors for stress relief. Finally, binary logistic regression was used to analyze the factors influencing both stress and drug use behaviors for stress relief. The significance level for all statistical tests was set at $P < 0.05$.

Results

General characteristics of the sample

The study involved a total of 296 participants, with a majority being females (56.1%). The average age of the participants was 33 years. More than half (53.7%) of the participants were born outside of Bangkok, and the majority (64.5%) were unmarried. Only 10.5% of the participants had a pre-existing medical condition, and 85.7% ($n = 40$) of those with a pre-existing condition were receiving treatment. Additionally, most participants (68.2%) had a bachelor's degree, with a significant proportion (38.5%) graduating from faculties related to the public health system. The majority of medical representatives (57.4%) had sufficient income. Furthermore, 33.1% of the participants' parents were divorced or widowed.

Regarding living arrangements, 56.1% of the participants resided in condominiums or dormitories, indicating limited living space. Moreover, 49.0% of the participants lived alone. In terms of work experience, the average duration of working as a pharmaceutical sales representative was 7 years, with an average tenure at the current company of 4 years. Notably, two-thirds (66.9%) of the participants had previously worked for more than two pharmaceutical companies. Additionally, 80.4% of the participants expressed their intention to change jobs or companies within the next five years. Furthermore, 33.8% of the participants had taken vacation leave in the past four weeks, and 66.9% of the participants considered the sales targets set by the company to be unreasonable.

The study found that the majority of medical representatives perceived their current workload as moderate to heavy, with the number of hospitals they were responsible for being moderate to high. The most frequently encountered challenge was the unavailability of physicians and other healthcare personnel for meetings. Less frequently reported challenges included physicians and healthcare personnel refusing to meet with sales representatives. Additionally, some sales representatives expressed concerns about their lack of confidence in their product knowledge and personal presentation skills.

The study assessed the stress levels of medical representatives using a standardized questionnaire. The average overall stress score was 50.6 ± 12.1 points. Based on these scores, the participants were categorized into three groups: 1) **low stress level:** This group consisted of individuals who scored below 49.75 points, representing 50 participants (16.9%). 2) **moderate stress level:** This group comprised individuals who scored between 49.75 and 61.14

points, encompassing 201 participants (67.9%). 3) **high stress level:** This group included individuals who scored above 61.13 points, totaling 45 participants (15.2%).

In **Table 1**, it was found that factors significantly correlated with stress including, field of undergraduate study, number of companies previously worked at to present, expected tenure in current company, unavailability of medical personnel, medical personnel being uninterested or not listening, medical personnel being dismissive or confrontational, denial of access by medical personnel, demands or claims made by medical personnel, lack of confidence in product knowledge, lack of confidence in personal appearance. Stress significantly correlated with living conditions, feeling that work is burdensome ($P < 0.01$). Additionally, stress significantly correlated with gender, marital status, current tenure in the company, current living situation (with friends), feelings towards sales targets set by the company, feelings towards the number of hospitals ($P < 0.05$).

When various factors were analyzed using logistic regression with the level of stress as the outcome variable, it was found that males have a 1.6 times higher likelihood of experiencing high levels of stress compared to females ($P = 0.039$, 95% CI 1.025-2.576). Being single has a 0.6 times lower likelihood of experiencing high levels of stress compared to being married ($P = 0.021$, 95% CI 0.345-0.916). Those studying health science disciplines have a 0.573 times higher likelihood of experiencing high levels of stress compared to those not studying health science disciplines ($P = 0.027$, 95% CI 0.350-0.937). Parents who are married have a 0.4 times lower likelihood of experiencing high levels of stress compared to those whose parents are divorced ($P < 0.001$, 95% CI 0.259-0.706). Feeling that work is burdensome has a 1.640 times higher likelihood of experiencing high levels of stress compared to those who do not feel that work is burdensome ($P = 0.048$, 95% CI 1.003-2.679). Feeling that sales targets are logical has a 0.6 times lower likelihood of experiencing high levels of stress compared to those who do not feel that sales targets are logical ($P = 0.033$, 95% CI 0.344 - 0.955). Facing issues where medical personnel do not allow visits has a 2.5 times higher likelihood of experiencing high levels of stress compared to those who do not face such issues ($P < 0.001$, 95% CI 1.543 - 4.065). Lacking confidence in personal appearance has a 4.486 times higher likelihood of experiencing high levels of stress compared to those who do not lack confidence in personal appearance ($P < 0.001$, 95% CI 2.128 - 9.457) (**Table 2**).

Table 1. Factors associated with stress (n = 296).

Factor	Stress levels			P-value
	N	Mean	SD	
Gender				
Male	135	52.4	12.3	0.017*
Female	161	49.0	11.8	
Age				
< 33 years	140	50.2	13.7	0.596
≥ 33 years	156	50.9	10.6	
Underlying disease				
No	256	50.7	12.0	0.645
Yes	40	49.8	13.1	
Birthplace				
Bangkok	90	49.3	12.4	0.245
Upcountry	206	51.1	12.0	
Marital status				
Single	195	51.5	12.9	0.057
Married	101	48.7	10.3	
Education level				
Bachelor's degree	241	50.0	11.7	0.077
Master's degree	55	53.2	13.7	
Field of study				
Pharmacy	60	48.1	12.6	< 0.001***
Health sciences	140	49.3	12.3	
Other	74	57.7	11.7	
Sufficiency of income				
Sufficient	225	49.9	12.6	0.106
Insufficient	71	52.6	10.4	
Parental marital status				
Married	201	49.9	12.9	0.181
Divorce	95	51.9	10.2	
Father's presence				
Live	226	49.7	13.0	0.021*
Died	70	53.5	8.0	
Mother's presence				
Live	276	50.9	12.3	0.120
Died	20	46.5	8.8	
Living with parents and siblings				
Yes	25	46.8	13.3	0.182
No	236	50.2	11.9	
Living with spouse and children				
Yes	81	52.5	11.1	0.160
No	200	50.3	12.7	
Living with friends				
Yes	5	40.0	0.0	0.049*
No	291	50.8	12.2	
Alone				
Yes	145	49.3	12.61	0.071
No	151	51.8	11.54	
Housing type				
Dormitory	10	39.5	5.8	< 0.002**
Condominium	156	51.5	11.1	
Single house	110	49.8	13.6	
Town house	20	53.3	11.3	

Table 1. (Cont.) Factors associated with stress (n = 296).

Factor	Stress levels			P-value
	N	Mean	SD	
Total medical representative work experience				
< 6 years	143	50.4	12.0	0.181
≥ 6 years	153	50.8	12.3	
Years of employment in the current company				
< 5 years	198	49.7	12.5	0.077
≥ 5 years	98	52.3	11.2	
Number of companies worked				
< 2 companies	107	47.4	9.1	<0.001***
≥ 2 companies	189	52.4	13.2	
Expected duration of employment				
< 5 years	198	49.7	12.5	0.077
≥ 5 years	98	52.3	11.2	
Vacation days in the past 4 weeks				
yes	100	50.2	12.8	0.705
no	196	50.8	11.8	
Perception of sales targets				
Reasonable	211	49.5	12.5	0.014*
Unreasonable	85	53.3	10.7	
Number of hospitals				
High	41	55.6	6.6	0.013*
Moderate	120	50.3	11.8	
Mild	135	49.3	13.3	
Perceived workload				
High	96	53.6	11.5	0.008**
Moderate	95	49.7	14.2	
Mild	105	48.6	10.1	
Doctors/medical personnel are not available				
High	96	55.1	11.4	< 0.001***
Moderate	130	51.6	10.8	
Mild	70	42.4	11.7	
Doctors/medical personnel are not listening				
High	45	56.7	9.4	< 0.001***
Moderate	91	56.3	11.5	
Mild	160	45.6	10.9	
Doctors/medical personnel blame				
High	5	62.0	0.0	< 0.001***
Moderate	41	58.9	8.4	
Mild	250	49.0	12.1	
Doctors/medical personnel denial of access				
High	20	60.3	8.3	< 0.001***
Moderate	91	54.8	9.9	
Mild	185	47.4	12.3	
Doctors/medical personnel demands or claims				
High	56	63.8	7.5	< 0.001***
Moderate	115	52.8	8.7	
Mild	125	42.6	10.4	
Lack of confidence in product knowledge				
High	15	63.0	3.9	< 0.001***
Moderate	30	59.7	11.9	
Mild	251	48.7	11.6	
Lack of confidence in personal appearance				
High	10	57.5	10.0	< 0.001***
Moderate	35	62.6	10.4	
Mild	251	48.6	11.4	

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

Table 2. Logistic regression analysis of relationships between various factors and stress (n = 296).

Factor	B	Odds Ratio(95% CI)	P-value
Work in the current company < 5 years (Ref. group: work in current company ≥ 5 years)	0.307	1.359 (0.835-2.211)	0.217
Expected to work at current company < 6 years (Ref. group: Expected to work at current company ≥ 6 years)	0.035	1.036 (0.583-1.840)	0.904
Have taken vacation leave in the past month (Ref. group: Have not taken vacation leave in the past month)	0.061	1.063 (0.657-1.721)	0.803
Feeling that work is burdensome (Ref. group: Not feeling that work is burdensome)	0.494	1.640 (1.003-2.679)	0.048*
Feeling that sales targets are reasonable (Ref. group: Feeling that sales targets are not reasonable)	-0.556	0.573 (0.344-0.955)	0.033*
Problem of medical personnel denying access (Ref. group: No problem of medical personnel denying access)	0.918	2.504 (1.543-4.065)	<.001*
Lack of confidence in self-image (Ref. group: No problem with lack of confidence in self-image)	1.501	4.486 (2.128-9.457)	<.001*

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

The behavior of using anti-stress medication has the highest average score, which is taking a complete set of medicine when feeling stressed, at 2.9. Following this is taking anti-anxiety medication with alcohol/beer at 2.8, and taking medication more than prescribed at 2.8, respectively. After calculating the mean and standard deviation to categorize into 3 levels, it was found that the majority belonged to the group with a high level of adherence, totaling 186 individuals, or 62.8%. Next was the group with very high adherence, totaling 100 individuals, or 33.8%, followed by the group with adequate adherence, totaling 10 individuals, or 3.4%.

Next, Pearson's Correlation was used to test the relationship between stress and anti-anxiety medication usage behaviors. It was found statistically significant relationship ($P < 0.001$) for behaviors such as smoking to reduce stress, reading medication labels before use, taking medication as directed on labels, storing medications properly, discarding expired medications, purchasing medication sets for consumption when feeling stressed, sharing anti-anxiety medication with relatives/friends with similar symptoms, stopping medication after symptoms improve, engaging in relaxing activities when stressed, consuming anti-anxiety medication with alcohol/beer, storing medication out of reach of children, and taking anti-anxiety medication only when experiencing stress. Additionally, statistically significant relationships ($P < 0.002$) were found for using medication to reduce stress and drinking alcohol/beer/wine to reduce stress ($P = 0.01$). Behaviors with statistically significant relationships included purchasing anti-anxiety medication for personal use without consulting a doctor

($P < 0.013$) and purchasing the same type of medication again if symptoms persist after using up the medication ($P = 0.020$) as shown in **Table 3**.

Discussion

It was found that the average score of overall stress levels among the sample group is 50.6 points, out of a full score of 100. Comparing with the research by Titachote K.⁽¹⁾, which studied stress from work and stress reduction behaviors among pharmaceutical representatives in Bangkok from international pharmaceutical companies, involving 325 individuals in 2012 (2555 B.E.), using the same stress perception measurement tool related to work factors, it was found that the average score of overall stress levels in that sample group is 56.6 points, out of 100. The finding that the percentage of average scores is lower in this study is probably due to the inclusion of a sample group that does not belong to international pharmaceutical companies, which have more flexible policies. This includes managing off-patent drugs positively, as these drugs are already in the market. Furthermore, hospital procurement plans and policies in the public sector that emphasize the use of domestic drugs have increased significantly. Additionally, the government promotes and encourages several drugs to be covered by direct reimbursement and social security cards. There is a group that believes that the sales targets are set too high⁽¹²⁾, equivalent to the number of sample groups with moderate stress levels being two out of three, consistent with this study. The study on the stress of the job stability found that the highest average value is 3.3 points from full score 5.00 points, which corresponds to the research study that has a moderate stress level in most.⁽¹³⁾

Table 3. Correlations of stress reduction behaviors and their relationship with stress levels (n = 296).

Stress reduction behaviors	Level of stress reduction behaviors				Relationship with stress levels	
	SD	Min	Max	Median	r	P-value
Use medication to reduce stress	0.674	0	3	0	0.181	0.002**
Smoking to reduce stress	0.468	0	3	0	0.261	<0.001***
Drinking alcohol to reduce stress	0.798	0	3	1	0.149	0.010**
Using other substances besides cigarettes and alcohol to reduce stress	0.439	0	3	0	0.097	0.095
Read medication instructions on the label before use	0.935	0	3	3	-0.274	<0.001***
Purchase anti-stress medication for self-consumption without consulting a doctor	0.928	0	3	3	-0.145	0.013*
Take medication as directed on the label and follow the instructions	0.900	0	3	3	-0.324	<0.001***
Take medication over dosage	0.459	1	3	3	-0.049	0.400
Purchase medication to consume based on advertisements, printed materials, radio, TV, and social media etc	0.738	0	3	3	-0.049	0.404
Dispose of anti-stress medication that has changed in color, shape, or appearance and has been stored for a while	1.155	0	3	3	-0.242	<0.001***
Purchase expensive anti-stress medication because it is believed to be more effective in treatment than cheaper medication	1.023	0	3	3	0.005	0.938
Purchase a set of medication to take when feeling stressed	0.312	1	3	3	-0.326	<0.001***

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

Table 3. Correlations of stress reduction behaviors and their relationship with stress levels (n = 296).

Stress reduction behaviors	Level of stress reduction behaviors				Relationship with stress levels	
	SD	Min	Max	Median	r	P-value
Take anti-stress medication of relatives when experiencing similar symptoms	0.578	0	3	3	-0.232	<0.001***
Take anti-stress medication from colleagues when experiencing similar symptoms	0.556	1	3	3	-0.257	<0.001***
Use multiple types of anti-anxiety medications together when feeling stressed	0.471	1	3	3	0.019	0.744
Increased stress levels lead to higher Doses of stress-relieving medications	0.665	0	3	3	-0.056	0.337
Once symptoms improve, people tend to stop taking medication	1.319	0	3	1	0.346	<0.001***
When experiencing stress, they often engage in positive relaxation activities	0.975	0	3	3	-0.283	<0.001***
Often takes stress-relieving medication before driving to work	0.534	1	3	3	-0.044	0.449
Continuing Stress Medication Without Improvement	0.717	0	3	3	-0.135	0.020*
Consuming stress-reducing medication with alcohol	0.433	1	3	3	-0.224	<0.001***
Store medicines in a secure place out of the reach of children	1.099	0	3	3	-0.204	<0.001***
Take stress medication only when experiencing stress symptoms, and stop once symptoms subside	1.327	0	3	2	-0.394	<0.001***

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

When studying various factors related to stress, it was found that male representatives of medications are more likely to experience frequent stress. They face societal pressure to be strong and to lead.⁽¹⁴⁾ Being single decreases the likelihood of experiencing high levels of stress compared to being married by a factor of 0.562. It was found that individuals who are married and live together have higher life satisfaction and the highest levels of happiness⁽¹⁵⁾, scoring 11 points higher on stress scales compared to those in other fields of study. It was found that pharmacy students at Mahidol University have an average score of 48.8/90⁽¹⁶⁾, which categorizes them as highly stressed. Another study found that the stress levels of public health students are generally within normal limits at 53.8%⁽¹⁷⁾, which shows that different faculties have different effects on stress levels. The marital status of parents has a significant impact on stress. It conflicts with the study of the relationship between family commitment and health. It was found that the relationship between parents affects the mental health of their children.⁽¹⁸⁾ The current presence of a father is related to stress, with studies finding that representatives of deceased fathers have lower mental health scores than those whose fathers are still alive.⁽¹¹⁾ Living together with friends has a relationship with stress, both positively in helping us relieve stress and negatively in accumulating stress from living together. Residential characteristics are related to stress. Representatives of medications mostly live in condominiums and dormitories, which have relatively limited space and may affect stress.⁽¹⁾ The number of companies worked for to date is related to stress. It is consistent with another study that found representatives of medications have worked for two or more companies, and this factor is negatively related to stress. On the other hand, the transition of new-generation people is a common job to work for 1 - 2 years, often moving for career growth. The expected duration of continued work in the current company is related to stress. Whether staying or moving, factors such as workload, colleagues, job orientation, and life goals in life are situations that representatives of medications must face. It was found that the feeling of sales targets set by the company is related to stress.⁽¹⁾ It is consistent with another study that found that feeling that the sales targets set by the company are rational is negatively related to stress. The feeling that the job is a burden, the rate is 1 : 1 : 1, which is inconsistent with the

study of Titachote K.⁽¹⁾, who found that feeling that the job is a burden is not related to stress. It was found that the problems encountered when contacting doctors / medical personnel on all sides, 7/7 problems, namely medical personnel do not care / listen, do not let meet, argue / quarrel, negotiate / demand, not free. The problem of lack of confidence in product knowledge and lack of confidence in one's own personal image is consistent with the research of Sawanjang C.⁽¹¹⁾ and Titachote K.⁽¹⁾ research found that these problems are related to stress as well. Five out of seven problems. In addition, it was found that the factors most related to stress are criticism. Many service personnel must face situations where customers are dissatisfied.⁽¹⁹⁾ Moreover, if doctors / medical personnel are found to be very busy, it is difficult to meet with doctors to present medication information. And if doctors / medical personnel are demanding, representatives of medications and pharmaceutical companies may not be able to respond to all the needs of doctors. This affects the chances of prescribing and purchasing medication. These problems all affect the sales of representatives of medications. When sales do not meet targets, the stress of representatives of medications increases.

Furthermore, a study on behaviors to reduce stress medication use found that out of 126 people, 42.6% used stress medication. These included Benzodiazepines (26 people, 20.6%), followed by Flupentixol Melitracen (15 people, 11.9%). Additionally, 11.9% (15 people) used non-stress medications to reduce stress, such as Anti-histamine. Other medications used less frequently were analgesics, muscle relaxants, and melatonin agonists (5 people each, 4.0%). These findings align with the literature review on stress medication. Regarding the use of substances to reduce stress, 59.5% (176 people) consumed alcohol, followed by 10.1% (30 people) who smoked cigarettes.

The results regarding the level of stress-relief medication usage behaviors indicate an average score of 2.3. The majority belong to the group with a good level of practice, totaling 186 individuals (62.8%). This is followed by those with a very good level of practice, comprising 100 individuals (33.8%), and the group with a fair level of practice, consisting of 10 individuals (3.4%). Currently, there are no supporting or conflicting research studies with these findings, but there are similar studies such as Kanika S.⁽²⁰⁾ research on pain medication usage behaviors among textile

factory employees in the Phasi Charoen district, Bangkok, where employees had an average behavior score of 1.4, indicating good behavior levels. Additionally, Laouhulaikul A. ⁽²¹⁾ studied pain medication usage behaviors among residents of Tha Mai district, Chanthaburi province, involving 400 individuals, finding that their behaviors were relatively good.

Factors related to stress-relief medication usage behaviors are as follows: Age was found to have a significant correlation with stress-relief medication usage behaviors. Females who are medication representatives exhibited higher average scores in stress-relief medication usage behaviors compared to males. This aligns with previous research indicating that females tend to have better pain medication usage behaviors due to their self-care practices. Chronic illnesses also showed a difference in average scores of stress-relief medication usage behaviors, explained by the fact that individuals with chronic illnesses already have prescribed medications, directly influencing their stress-relief medication behaviors. Education levels among employees also showed significant differences in pain medication usage behaviors, with those who completed undergraduate degrees exhibiting better behaviors than those with other educational backgrounds. ⁽²⁰⁾ This consistency aligns with the study field where graduation was found to have a relationship with stress-relief medication usage behaviors, potentially due to knowledge related to appropriate medication use. Marital status of parents also significantly influenced good mental health and positive behaviors among children ⁽¹⁸⁾, correlating with the research findings. Income adequacy significantly influenced stress-relief medication usage behaviors, with income impacting behaviors. ⁽²¹⁾ This contradicts another study which found that employees at all income levels had good pain medication usage behaviors ⁽²¹⁾, potentially due to similar professional studies in the same area. Number of companies worked until present, it was found that job transitions among new generation workers are common, typically working 1 - 2 years then moving for career growth. This aligns with the pharmaceutical representative profession, known for frequent job changes. Expected duration of continued work at current company can be explained from job stability perspective, reducing stress, medication use, while in contrast may not last long due to stress, thus finding solution by using stress reducing medicine. Vacation leave in the previous four

weeks can be explained from the standpoint of working hard to rest and of the opportunity to reduce stress. The group may use anti-stress medication. Number of hospitals or clinics for which they are responsible shows that 54.4% felt that the number of hospitals or clinics for which they are responsible is excessive, it can be argued that heavy workload and workload risk might lead to stress. This may result in seeking stress relief medications. The issue arises when contacting the doctor or medical staff. Find 5/7 issues that they can often use. Problems encountered in physician / medical staff are not interested / do not care, do not give in, negotiation/demanding, problems of lacking confidence in product knowledge, and lacking self-confidence. In this study, it was found that representatives encountering these issues are a minority because physicians/medical personnel are relatively more open to listening to new drug information. The relationship between access factors to stress-relieving medication and medication usage behavior revealed that individuals recommending pain relievers are medical personnel.

Due to the fact that the sample population used in this study comprises pharmaceutical representatives who operate in the Bangkok metropolitan area and its suburbs, the objectives of this research are limited to studying work-related stress and stress-relief medication usage behaviors among current pharmaceutical representatives only. Therefore, the findings cannot be generalized to all pharmaceutical representatives in every region. The results of this study can be utilized as guidelines for developing stress management strategies within pharmaceutical organizations, aiming to improve the mental health, work efficiency, and organizational image of pharmaceutical representatives. Organizations with satisfied and healthy pharmaceutical representatives tend to benefit overall. usage behaviors occurred before or after certain events. Therefore, the outcomes may not be universally applicable to all pharmaceutical representatives in different geographical areas.

Future studies should focus on exploring the relationship between stress and stress-relief medication usage behaviors among pharmaceutical representatives. Additionally, effective stress management strategies tailored specifically for pharmaceutical representatives should be investigated. Further research should expand the scope to include pharmaceutical representatives from various provinces and regions.

This study is a cross-sectional research conducted at a specific point in time. Consequently, the data collected cannot indicate whether stress or stress-relief medication.

Conclusion

Two-thirds of pharmaceutical representatives in the Bangkok metropolitan area and its outskirts have an average stress level score related to work factors. Furthermore, two-thirds of them exhibit good levels of behavior in using stress-relieving medications.

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Conflict of interest statement

The authors has completed and submitted the International Committee of Medical Journal Editors Uniform Disclosure Form for Potential Conflicts of Interest. None of the authors disclose any conflict of interest.

Data sharing statement

Data sharing statement. All data generated or analyzed during the present study are included in this published article. Further details are available for noncommercial purposes from the corresponding author on reasonable request.

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