



Portraying the coping mechanisms to occupational stress in the BFP national capital region

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Article Info

ISSN (online): 2582-7138

Volume: 04

Issue: 03

May-June 2023

Received: 15-04-2023;

Accepted: 21-05-2023

Page No: 928-932

Abstract

This research provides valuable insights into the demographics, occupational experiences, coping mechanisms, and their relationships within the Bureau of Fire Protection (BFP) in the National Capital Region. The findings reveal that the majority of BFP personnel in the region are male, with the most represented age group being 30-34 years. They have varying years of service, with a significant portion serving in the BFP for 6-10 years. The area of assignment is evenly distributed across cities, municipalities, and substations. Respondents have responded to a range of fire incidents, with the majority reporting 1-10 incidents. Overall, BFP personnel rated their individual performance commitment and review as "Very Satisfactory" across the assessed dimensions. In terms of coping mechanisms, the study indicates a generally low level of agreement with operational stressors, suggesting areas for improvement. However, respondents showed high levels of agreement with intrapersonal coping mechanisms, such as reassessment of oneself, maintaining a positive mindset, and taking personal responsibility. Interpersonal coping mechanisms had mixed levels of agreement, highlighting the need for further attention to aspects such as criticism towards others and problematic relationships. Furthermore, the correlation analysis reveals no significant relationship between intrapersonal or interpersonal coping mechanisms and performance. These findings emphasize the importance of targeted interventions to address specific challenges and enhance the well-being and performance of BFP personnel. This research serves as a foundation for developing strategic initiatives and programs aimed at improving the occupational experiences, well-being, and effectiveness of BFP members in the National Capital Region. By addressing identified challenges and promoting effective coping mechanisms, the BFP can foster a supportive and resilient workforce, ensuring the delivery of high-quality fire protection services to the community.

Keywords: Coping Mechanisms, Occupational Stress, Bureau of Fire Protection

Introduction

In a broad sense, combating fires is a dangerous work. Hazard management involves how they carry out operational procedures. Since occupational risks have caused officers to deviate from their duties and be fired, it is crucial to note that the implementation of such measures runs concurrently with the expectation, acknowledgement, valuation, and regulation of hazards (Hopkin, 2018; Ouache *et al.*, 2021) ^[5, 14]. Assessing information about the fire department is much more crucial when dealing with fire dangers (Qin *et al.*, 2022) ^[15]. The phrase "occupational hazards" refers to dangers that are both immediate and long-term and that are connected to the employment environment, according to Rakesh Chaturvedi's essay "Risk and Occupational Hazards of Firefighters" that was published in the Asia Pacific Fire journal in 2019. The paper also mentioned a number of risks and hazards associated with exposure, including cardiovascular illness, heat fatigue, heat stress, ergonomic issues, and psychological

consequences. Being a fireman carries a number of risks, including the possibility of physical harm to oneself. Burns, smoke inhalation, and crush injuries from collapsing structures are risks for firefighters (McQuerrey, 2018). The Realities of Firefighter Health and Safety - (FutureFirefighters.org) placed focus on the idea that disease and mortality caused by a variety of circumstances are a reality of firefighter health and safety. Heat injury, collapsing, colliding, aggression, cardiovascular illness, smoke exposure that may cause cancer, and mental stress are all risks for firefighters. A study is available but focuses on the exercise and occupational stress among fire fighters. The aim of such study was assessing any possible links between physical exercise and fire fighters' job-related stress. An electronic survey that was given to firefighters was launched in research by Laura Walker (2016) titled "Occupational Risks and Hazards Associated with Firefighting." The threats to a firefighter's health and safety were highlighted by this study. Health and wellness were identified as one of the main firefighting threats in the survey evaluation results. A few research concentrate more on health risks. But it is definitely true that there are many different reasons of firefighting risks. Risks of exposure and physical harm are among them.

Research should be done to determine the stressors that firefighters experience at work and at home and to develop solutions to address those stressors (Milen, 2009) ^[12]. This research aims to identify the extent of exposure to workplace risks in terms of health and physical aspects in order to fill the gap in the limited literature on the interconnectedness of exposure to occupational hazards with physical and psychological component in one paradigm. Additionally, this study tries to comprehend the coping strategies developed by the field-based fire officers in spite of the life-threatening dangers they encounter. Dr. David Milen (2009) ^[12] also said that stress is a daily occurrence for firefighters in their working environments. Their capacity to work efficiently in emergency situations is impacted by their capacity to manage stress (Comfort, 2007) ^[3]. The ability of firefighters to efficiently carry out their duties is important to society. Society relies on the services of the firefighting people who put in long hours with little rest in these circumstances due to the threat of natural catastrophes, the threat of terrorist attacks, mass deaths, and serious environmental incidents (Merga, 2016) ^[13]. Fire departments and the staff who work there need to be aware of the stress involved and develop efficient coping mechanisms.

In addition, environmental extremes, such as heat, cold, wind, and noise, as well as stressful conditions and traumatic events are all encountered by firefighters, necessitating the use of adaptable safety measures (i.e., personal coping strategies; Lazarus & Folkman, 1984) ^[10]. When performing emergency operations on scene, firefighting personnel may feel more stress due to working in challenging situations. For instance, the 1986 Cerritos air crash, which resulted in a large number of casualties, left the firefighters who raced to the scene in severe stress and psychological suffering (Hokanson & Wirth, 2000) ^[4]. In terms of coping, coping strategies can include minimizing the stressor, accepting the current difficult circumstances, or trying to manage the stressful environment that surrounds the event (Lazarus & Folkman, 1984) ^[10]. In line with this paradigm, Klinger (1977) ^[8] proposed that people put out more effort and concentration when they are initially reacting to a stressor. However, if the stressor continues, anger and irritation may happen,

eventually leading to sadness, a sense of hopelessness, and negative thoughts. According to Lazarus and Folkman's theory of stress and coping, there are numerous ways that stressors can affect people differently based on the scenario, how they experience stress in daily life, and how their coping mechanisms. The basis of this study was these methods, which can be adapted to the conditions of the firefighting industry. Addressing these gaps in future research would contribute to a more comprehensive understanding of the occupational experiences, coping mechanisms, and overall well-being of BFP personnel. It would provide a foundation for developing targeted interventions, policies, and programs to support the resilience, effectiveness, and overall occupational health of BFP members in the National Capital Region and beyond.

Occupational risks & the coping mechanism in the BFP

Exposure to occupational risks refers to the potential dangers and hazards that individuals face in their work environments (Jackson *et al.*, 2007; Wisner, 2004) ^[7, 16]. In the context of the BFP (Bureau of Fire Protection), which is responsible for firefighting and other emergency services, there are various occupational risks that personnel may encounter. Coping mechanisms are strategies and practices individuals employ to deal with and mitigate the negative effects of these risks. Moreover, exposure to occupational risks in the Bureau of Fire Protection (BFP) poses significant challenges to the well-being of its personnel. Studies on occupational risks and coping mechanisms within the firefighting sector shed light on effective strategies. Research by Violante (2021) emphasized the physical hazards faced by firefighters, highlighting the importance of proper training and PPE in minimizing injuries. Another study by Lawn *et al.* (2020) ^[9] and Isaac & Buchanan (2021) ^[6] explored the psychological stress experienced by firefighters and found that peer support programs and access to mental health services were crucial in addressing emotional well-being. Additionally, a study by Lockie *et al.* (2022) ^[11] emphasized the role of physical fitness and wellness programs in enhancing firefighters' overall resilience and reducing the risk of musculoskeletal injuries. These studies collectively demonstrate the significance of comprehensive approaches encompassing training, PPE, psychological support, and wellness programs to effectively mitigate occupational risks and promote the well-being of BFP personnel (Armenti, 2001; Angat, 2019) ^[1, 2]. These studies provide valuable insights into the occupational risks faced by BFP personnel and offer evidence-based coping mechanisms to mitigate those risks effectively. The findings emphasize the importance of comprehensive approaches that address physical, chemical, psychological, and ergonomic hazards while providing training, support systems, and organizational resources to promote the well-being of firefighters in the BFP.

Methodology

The research methodology employed in this study involved collecting quantitative data through surveys administered to members of the Bureau of Fire Protection (BFP) in the National Capital Region. The sample consisted of BFP personnel from various ranks and positions. Data were collected on demographic variables such as age, gender, civil status, years of service, area of assignment, and number of responded fire incidents. In addition, respondents rated their individual performance commitment and review (IPCR)

across different dimensions. The study also included measures of occupational stressors, coping mechanisms, and their perceived relationship with performance. Data analysis involved descriptive statistics to examine the profile of respondents, percentages, means, and correlation analysis to explore the relationships between variables. Electronic survey forms will be used collect data while upholding privacy commitments. The responses from the online survey platform "SurveyHero" will be collected, and SPSS will be utilized to conduct the statistical analysis. With the results aggregated, tabulated, and graphed, this is utilized to further derive. This will be a 5-point Likert scale survey which captures the level of agreement in terms of the occupational stress brought about by the performance of duties and responsibilities. There will be five (10) statements and these will be answered using the 5-point scale with: 5 – Strongly Agree, 4 – Agree; 3 - Neutral; 2 – Disagree; and 1 – Strongly Disagree.

Results and Discussion

Table 1: Operation Dimensions

Indicators	Mean	VD
Physical exposure to toxic materials	2.12	D
Failure in search and rescue operations	2.10	D
Physical injuries during task	2.12	D
Watching a death and suffering from victims	1.56	D
Manual handling of equipment	3.05	MA
Grand Mean	2.1	D

Table 1 presents the mean scores and the level of agreement/disagreement (VD) for various operation dimensions related to occupational stressors within the Bureau of Fire Protection (BFP) in the National Capital Region. The data indicates that respondents generally reported a disagreement (D) with the presence of these stressors. The indicators of physical exposure to toxic materials, failure in search and rescue operations, and physical injuries during tasks all received mean scores around 2.12, indicating a disagreement with the existence of these stressors. The indicator of watching death and suffering from victims received a significantly lower mean score of 1.56, suggesting a strong disagreement with the occurrence of this stressor. On the other hand, the indicator of manual handling of equipment received a higher mean score of 3.05, indicating a moderate agreement (MA) with this stressor. Overall, the grand mean score of 2.1 signifies a general disagreement with the presence of operation-related stressors. These findings indicate that, on average, the respondents perceive a relatively low level of exposure to occupational stressors, such as physical exposure to toxic materials, failure in search and rescue operations, physical injuries during tasks, and witnessing death and suffering. However, the issue of manual handling of equipment stands out as an area that requires attention and intervention to address the identified stressor. These insights can inform the development of targeted strategies and interventions to mitigate occupational stress and enhance the well-being of the BFP members in the National Capital Region.

Table 2: Intrapersonal

Indicators	Mean	VD
Reassessment of oneself	4.26	SA
Keeping a positive mindset	4.54	SA
Improving work habits	4.35	SA
Becoming Optimistic	4.26	SA
Taking personal responsibility	4.45	SA
Grand Mean	4.37	SA

Table 2 presents the mean scores and the level of agreement/disagreement (VD) for various intrapersonal coping mechanisms employed by members of the Bureau of Fire Protection (BFP) in the National Capital Region. The data indicates that respondents reported high mean scores across all indicators, reflecting a strong agreement (SA) with the utilization of these coping mechanisms. The indicators of reassessment of oneself, keeping a positive mindset, improving work habits, becoming optimistic, and taking personal responsibility all received mean scores ranging from 4.26 to 4.54, indicating a high level of agreement with these intrapersonal coping strategies. The grand mean score of 4.37 further reinforces the overall agreement with the effectiveness of these coping mechanisms. These findings suggest that, on average, the respondents employ intrapersonal coping mechanisms such as self-assessment, maintaining a positive mindset, improving work habits, fostering optimism, and taking personal responsibility to effectively manage occupational stress. The high agreement with these coping strategies highlights the resilience and proactive approach of BFP members in dealing with the challenges they face. Understanding these intrapersonal coping mechanisms can contribute to the development of supportive programs and initiatives that promote and enhance the well-being and stress management skills of BFP personnel in the National Capital Region.

Table 3: Interpersonal

Indicators	Mean	VD
Criticism towards others	2.62	MA
Problematic relationship	2.20	D
Lack of coordination with colleagues	2.18	D
Protecting and caring for other personnel	4.54	SA
Cooperating with office operations	4.80	SA
Grand Mean	3.28	A

Table 3 presents the mean scores and the level of agreement/disagreement (VD) for various interpersonal coping mechanisms employed by members of the Bureau of Fire Protection (BFP) in the National Capital Region. The data reveals mixed results in terms of the agreement with these coping mechanisms. The indicator of criticism towards others received a mean score of 2.62, indicating a moderate agreement (MA) with this coping strategy. On the other hand, the indicators of problematic relationship and lack of coordination with colleagues received lower mean scores of 2.20 and 2.18, respectively, reflecting a disagreement (D) with the presence of these stressors. In contrast, the indicators of protecting and caring for other personnel and cooperating with office operations received high mean scores of 4.54 and 4.80, respectively, indicating a strong agreement (SA) with

the utilization of these coping mechanisms. The grand mean score of 3.28 suggests an overall agreement (A) with the effectiveness of these interpersonal coping strategies. These findings suggest that, on average, the respondents engage in interpersonal coping mechanisms such as protecting and caring for other personnel and cooperating with office operations to effectively manage occupational stress. However, there are areas for improvement, as indicated by the moderate agreement with criticism towards others and the disagreement with problematic relationships and lack of coordination with colleagues. These insights can inform the development of strategies and interventions aimed at

promoting positive and supportive interpersonal relationships among BFP personnel, enhancing teamwork and collaboration, and minimizing stressors related to interpersonal dynamics.

The table 4 displays the correlation coefficients between the various dimensions of the Bureau of Fire Protection's (BFP) programs (Fire Prevention Management Program, Enforcement of Fire Safety Law, Regulations and others, Information, Education, and Communication, and Fire and Emergency Management Program) and the intrapersonal coping mechanism.

Table 4: Significant relationship between intrapersonal and performance

	Fire Prevention Management Program	Enforcement of Fire Safety Law, Regulations and other	Information, education and communication	Fire and Emergency Management Program	intrapersonal
Fire Prevention Management Program	1				
Enforcement of Fire Safety Law, Regulations and other	0.05	1			
Information, education and communication	0.05	-0.26667	1		
Fire and Emergency Management Program	0.130437	-0.22361	0.130437	1	
intrapersonal	-0.02722	0.489898	-0.28577	-0.16736	1

The correlation coefficient values indicate the strength and direction of the relationship between these variables. The intrapersonal coping mechanism shows a weak negative correlation (-0.027) with the Fire Prevention Management Program, suggesting a minimal and inverse relationship between the two variables. In contrast, the Enforcement of Fire Safety Law, Regulations and others dimension exhibits a moderate positive correlation (0.490) with the intrapersonal coping mechanism, indicating a relatively stronger and positive relationship. The Information, Education, and Communication dimension demonstrates a moderate negative correlation (-0.286) with the intrapersonal coping mechanism, suggesting a somewhat stronger and inverse relationship. Similarly, the Fire and Emergency Management Program dimension shows a weak negative correlation (-0.167) with the intrapersonal coping mechanism. These correlation coefficients provide insights into the relationships between the BFP's program dimensions and the intrapersonal coping mechanism. It suggests that the Enforcement of Fire Safety Law, Regulations and others dimension is more closely related to the intrapersonal coping mechanism, while

the Fire Prevention Management Program, Information, Education, and Communication, and Fire and Emergency Management Program dimensions show weaker or inverse relationships.

The table 5 displays the correlation coefficients between the various dimensions of the Bureau of Fire Protection's (BFP) programs (Fire Prevention Management Program, Enforcement of Fire Safety Law, Regulations and others, Information, Education, and Communication, and Fire and Emergency Management Program) and the intrapersonal coping mechanism. The correlation coefficient values provide insights into the strength and direction of the relationship between these variables. In this case, the intrapersonal coping mechanism shows a very weak positive correlation (0.007) with the Fire Prevention Management Program, suggesting a minimal and positive relationship between the two variables. Similarly, the Enforcement of Fire Safety Law, Regulations and others dimension exhibits a moderate positive correlation (0.387) with the intrapersonal coping mechanism, indicating a relatively stronger and positive relationship.

Table 5: Significant relationship between interpersonal and performance

	Fire Prevention Management Program	Enforcement of Fire Safety Law, Regulations and other	Information, education and communication	Fire and Emergency Management Program	intrapersonal
Fire Prevention Management Program	1				
Enforcement of Fire Safety Law, Regulations and other	0.05	1			
Information, education and communication	0.05	-0.26667	1		
Fire and Emergency Management Program	0.130437	-0.22361	0.130437	1	
intrapersonal	0.006676	0.387183	-0.12016	-0.17166	1

On the other hand, the Information, Education, and Communication dimension demonstrate a weak negative correlation (-0.120) with the intrapersonal coping mechanism, suggesting a minimal inverse relationship. Similarly, the Fire and Emergency Management Program dimension shows a weak negative correlation (-0.172) with the intrapersonal coping mechanism. These correlation coefficients shed light on the relationships between the BFP's program dimensions and the intrapersonal coping mechanism. It suggests that the Enforcement of Fire Safety Law, Regulations and others dimension has a relatively stronger positive relationship with the intrapersonal coping mechanism. Meanwhile, the Fire Prevention Management Program, Information, Education, and Communication, and Fire and Emergency Management Program dimensions demonstrate weaker or inverse relationships.

Overall, these findings provide a comprehensive overview of the demographics, occupational experiences, coping mechanisms, and their relationships within the BFP in the National Capital Region. The results highlight the need for targeted interventions to address specific challenges, such as interpersonal dynamics and stressors related to manual handling of equipment. Additionally, the high levels of agreement with intrapersonal coping mechanisms and the positive IPCR ratings indicate a strong foundation for employee well-being and performance. These findings can inform the development of strategies, programs, and policies to support the BFP members in their roles and improve their overall effectiveness in serving their communities.

Conclusion

The findings from the analyze data provide valuable insights into various aspects of the members of the Bureau of Fire Protection (BFP). Based on the findings, the operation dimensions highlighted a generally low level of agreement with stressors, while the intrapersonal coping mechanisms received high agreement ratings. The interpersonal coping mechanisms showed mixed levels of agreement. The correlation analysis indicated no significant relationship between intrapersonal or interpersonal coping mechanisms and performance. These findings provide a comprehensive understanding of the BFP members in terms of their profiles, occupational experiences, coping mechanisms, and their relationships. The results emphasize the need for targeted interventions to address specific challenges, enhance interpersonal dynamics, and manage stressors related to equipment handling. Furthermore, the positive ratings for intrapersonal coping mechanisms and IPCR ratings indicate a strong foundation for employee well-being and performance. These insights can guide the development of strategies, programs, and policies aimed at improving the overall effectiveness, job satisfaction, and well-being of the BFP members in the National Capital Region, ultimately leading to a more efficient and effective fire protection service for the community.

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