



## OCCUPATIONAL STRESS IN RELATION TO THE QUALITY OF SERVICE OF FIREFIGHTERS DURING COVID-19 PANDEMIC

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### **Abstract:**

A career that is particularly exposed to stressful situations is firefighting. In 2019, more fire occurrences were reported, according to the Bureau of Fire Protection (BFP). The objectives of this study are to determine and understand the level of occupational stress among firefighter personnel and how it affects the quality of service of firefighters personnel during the COVID-19 pandemic. The respondents of this study were personnel from the Bureau of Fire Protection (BFP) in Davao City who had been in service for at least three years. The researcher identifies the personnel of the Bureau of Fire Protection (BFP) in Davao City as the primary respondents of this study as they can provide authenticity, reliability, and accurate data that could answer the study's objective. Simple random sampling procedures were employed to choose respondents from each fire station in Davao City. An adapted survey questionnaire was used in the study to gather data. By using descriptive and inferential statistics, the collected data is statistically analysed. Mean was used to determine the level of stress and quality of services of BFP. Pearson  $r$  was employed to describe a significant relationship that existed between stress and the quality of services of firefighters. Interpretations would be based on a 0.05 level of significance. Further, the P-value generated from the correlated data was used specifically to determine the level of significance. The result of the study found that there is a significant relationship between occupational stress and the quality of service of BFP during the COVID-19 pandemic. Therefore, the hypothesis is rejected. The researchers recommend comparing the level of occupational stress before the pandemic and during the pandemic.

**Keywords:** occupational stress, quality of service, COVID-19, strong institution quantitative, Philippines

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## 1. Introduction

A career that is particularly exposed to stressful situations is firefighting. In 2019, more fire occurrences were reported, according to the Bureau of Fire Protection (BFP). According to the data, sixteen thousand three hundred eighty-two fire occurrences were recorded in the Philippines for the entire year (Cabrera, 2019). In the BFP, firefighting activities take too long to accomplish because of the scarce resources and antiquated technology. Due to the increased damage brought on by the lengthy completion time, it is almost impossible to save every life affected by a fire disaster (Zadeh, N. *et al.*, 2021).

Between 2011 and 2019, there have been over 1,300 fire incidents in the Philippines, which caused over Php 4 billion in the destruction of property and hundreds of casualties (Villa & Ceballos, 2012). Due to the challenges, the fire department took longer than expected to arrive at the scene. Some of these challenges included delayed community reports of the fire, a lack of public awareness regarding the importance of giving attention to fire engines and supporting infrastructure like some emergency vehicles whose age was significant enough to affect fire suppression assistance (Kahanji *et al.*, 2019). Any fire station's capacity to put out flames must adhere to local, state, and federal regulations. The fire station's location and service area are significant variables in reducing the risk of a fire. Successful fire services also rely on various non-spatial variables, such as personnel, apparatus, vehicles, purpose, organization, and technology, among others, in addition to these geographical requirements (Tishi & Islam, 2019). To properly carry out fire extinguishing actions, the ideal staffing level by community demand is also crucial (Brzeziska *et al.*, 2019).

On the other hand, firefighters must be equipped with the necessary response skills to allay worries about their safety as they work to put out fires. The elements of firefighter preparedness include technical and context-specific knowledge, focused training, and past firefighting experience (Coulthard, 2018). The primary objective of fighting fires is to protect as many people's lives as possible, as well as the speed and efficiency of a search heavily, depending on the amount of information that is immediately available. A firefighter's life could be in jeopardy if there is a gap in the information available to them (Hui *et al.*, 2021). Additionally, proper fire service facilities are necessary to provide sustainability through asset protection, life safety, business continuity, environmental protection, and historic preservation. To identify the significant service needs for upgrading the fire service facility, it is crucial to evaluate responsible urbanization with the effectiveness of fire service provision (Singh, Sabnani, & Kapse, 2021). Due to the lack of resources and technological advancements in the Philippines' Bureau of Fire (BFP), tasks take too long to complete. This poor performance leads to damage that makes it nearly impossible to save all the lives lost to the fire's flames (Zadeh *et al.*, 2021). Fire events have been a serious problem in the Philippines despite the Bureau of Fire's fire management system, affecting a variety of people. However, the most important service for people is the provision of the best fire-fighting carrier through a public fire department is one of. If the carrier performs well, the casualties and the harm

to people's assets may be effectively reduced. However, people's lives and assets can be effortlessly positioned in chance if there are any errors or irrelevant operations for the 3 duration of the development of the fire-combating. The fire-combating carrier of the general public fire department may be very intently associated with the safety of people's lives and belongings (Soravia *et al.*, 2021).

## 2. Literature Review

It is safe to say that the present BFP NCR process, which had 150 responders, is inefficient and does not meet the application requirements. However, the general mean for tangibles is 2.52, indicating they are only somewhat successful. It is safe to say that the service tangibles of BFP NCR's weighted mean can be regarded as having the ability to meet at least the bare minimum needs. According to the data from the weighted average summary of BFP NCR service quality, the current BFP NCR procedure was deemed ineffective, with a total score of 2.29 for all the criteria. However, in a study in Korea, which used responses from 209 workers, job stress, inadequate job control, a lack of rewards, the working atmosphere, joblessness, and interpersonal conflict all hurt the service quality factors of tangibility, reliability, ability to respond, and empathy (Ahn, 2014).

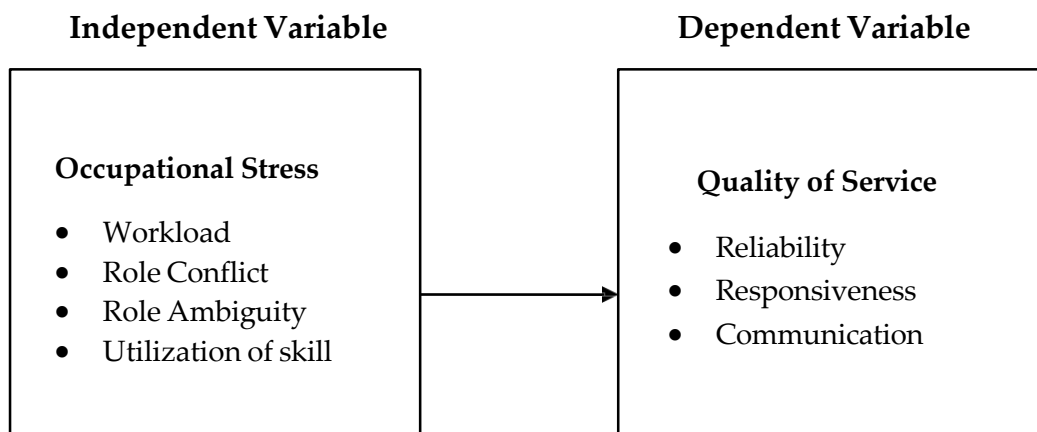
According to Kadir, Kamariah, and Saleh's (2017) study of 115 nurses and 299 patients in Indonesia, role conflict and role ambiguity impact job satisfaction in the nursing profession. The patient unit, emergency room, and urgent care all have different levels of role ambiguity. Additionally, nursing in Iran is sometimes a difficult and stressful profession. This study set out to determine the incidence of activity stress 4 among nurses and its risk variables. In a study of 5,422 Iranian nurses, demographic data and activity stress were evaluated (2,895 of the surveys analysed). The average score for general activity stress was three.48, indicating a degree of moderate and severe stress. 78.4% of respondents reported that their job was stressful. The issues that nurses cited were shift work, staffing, remuneration, geographic point unfairness, leadership, regulation, and excessive workloads. The human personality dimension may provide a technique to understand why an associate degree worker appears more or less invested in their work, according to Thakre and Jadhav's Indian study from 2022. Knowing whether or not an employee is happy or stressed out about their work also benefits the United States.

The study examines the relationship between high and low extraversion employees' effects on work-related stress, involvement in their jobs, and career satisfaction among sales staff. The data were examined using the t-test. There are significant differences between individuals with high openness to experience and low extraversion when it comes to job satisfaction, workplace involvement, and occupational stress ( $t(118) = .826, p 0.05$ ), (Thakre N. & Jadhav R.) Based on the results, outgoing sales personnel have less activity stress, are concerned about their work, and are content with their jobs. The crucial advancement of extroversion's effects on job stress, job

engagement, and job happiness might cause firms to recognize and adapt to the needs of the workforce. However, Chitra's study (2020) aims to investigate how demographic characteristics affect activity stress and work satisfaction and how they affect how happy faculty academics are with their tasks in this COVID-19 pandemic situation. The researcher is aware that demographic parameters such as gender, age, monthly income, work experience, and academic qualification have a significant impact on academic activity pressure. The relationship between job happiness and academic qualification is not as strong as the relationship between gender, monthly income, and work experience. However, there is no correlation between a lecturer's age and their pleasure with their work. The investigation further demonstrates the significant relationship between the opinions of online forums and activity stress, job satisfaction, and task satisfaction. Furthermore, the study demonstrates a relationship between job satisfaction and occupational stress. According to the Pearson correlation, there is a link between job satisfaction and occupational stress: for every 1% rise in job stress, there is a 0.54% drop in job satisfaction among teachers (Chitra, 2020).

### 3. Study Objectives

The Organizational Support Theory of Eisenberger (1986) would serve as the theoretical foundation for this investigation. According to the organizational support theory, employees develop a broad perception of how much their employer appreciates their contributions and is concerned about their well-being in order to meet their socio-emotional demands and evaluate the advantages of increased work effort. Employees felt a responsibility to aid the organization in achieving its goals, and their affective attachment to the organization, and their anticipation that increased performance would be rewarded would all increase as a result of such perceived organizational support (POS). Rises in in-role and extra-role performance, as well as a decrease in stress-related withdrawal behaviors like absenteeism and turnover, are examples of behavioural effects of POS.



**Figure 1:** Conceptual Framework of the Study

The Occupational Stress refers to the ways in which sources of stress in the work environment can lead to psychological, behavioral, or physiologic manifestations of stress, and to longer-term health effects (Levy, B. *et al.*, 2017). Moreover, occupational stress greatly affects the quality of service; it causes job dissatisfaction, reduced creativity and reduced timely decision-making. An organization's ability to comprehend and meet the demands and expectations of its consumers is measured by the quality of its services. Any firm that wants to expand must first understand how to enhance the product service quality. It is a significant art to measure and improve the quality of services.

Workload, role conflict, role ambiguity, and skill use are listed as indicators of Occupational Stress by Pasca and Wagner (2022). The perceived link between the quantity of capacity or resources and the amount needed by the task is known as the workload. Employees who have contradictory work expectations experience role conflict. Role ambiguity happens when employees lack the knowledge necessary to do their jobs well or when the performance review process is unclear. Utilisation of skills refers to how well skills are used in the workplace to improve both team and individual performance. Offering top-notch public services is regarded as a means of accomplishing the objective of a successful government. Contrary to actual goods, services are created and consumed in the same location, in the view of both the client and the service provider.

The objectives of this study are to determine and understand the level of occupational stress among firefighter personnel and how it affects the quality of service of firefighter personnel during the COVID-19 pandemic. Specifically, it sought to answer the following: First, the level of occupational stress of firefighters during the COVID-19 pandemic in terms of workload, role ambiguity, under-utilization of skill, and role conflict. Second, the level of quality of service of firefighters during the COVID-19 pandemic in terms of reliability, responsiveness, communication, and tangibles. Lastly, is there a significant relationship between occupational stress and the quality of service of firefighters during the COVID-19 pandemic? This study hypothesized that there is no significant relationship between occupational stress and the quality of service of firefighters.

The indicators of the Quality of Service include reliability, responsiveness, communication, and tangibles. The capacity to deliver the promised service consistently and accurately is known as reliability. The ability to assist clients and deliver fast service is responsiveness. The purpose of communication is to satisfy consumers and inform them in a manner they can comprehend (Jonkisz, Karniej & Krasowska, 2021). Moreover, there is a need to study this phenomenon to understand how occupational stress affects the quality of service offered by the Firefighters of Davao City. The result of this study can be a guide to improving the quality of service of the fire department. Gaining visibility into their operation increases the level of effectiveness and provides better services. This result can be a basis for firefighting service quality management.

The result of this study would help UM administrators to create a plan that will help the government, specifically BFP, to lessen the stress on firefighters that could affect the services of firefighters. This study would help students to know the stress that BFPs

are facing and how it affects the quality of service. This may also be a guide to students who plan to become firefighters. This study may help them to improve their plan and appropriate interventions in assessing occupational stress and the quality of service among BFP personnel in the respective areas in Davao City. Moreover, this may serve as baseline data for the current situation or the problem of existing stress management training. The result of this study may inform the community what affects the quality of service of firefighter personnel. The result would be the basis for further ratings of the quality of service offered by BFP. This study is intended to help future researchers by being one of their sources in the expansion related to this study.

### 3. Methods

The respondents of this study were personnel from the Bureau of Fire Protection (BFP) in Davao City who had been in service for at least three years. They answer a wide range of requests, including those for help with fires, vehicle accidents, chemical contamination, flooding, and water rescue in addition to fires (Arble & Arnetz, 2020). The researcher identifies the personnel of the Bureau of Fire Protection (BFP) in Davao City as the primary respondents of this study as they can provide authenticity, reliability, and accurate data that could answer the study's objective. Further, as the study progresses, respondents can reliably provide the circumstances identified by researchers. Simple random sampling procedures were employed to choose respondents from each fire station in Davao City. This would help to ensure that the sample population was representative of the entire city. It was a method where respondents had an equal probability of being chosen from the whole population (Latpate *et al.*, 2021). Male or female responders make up the sample.

Davao City is located in Southern Mindanao Island, Philippines. Davao City has 15 fire stations. These stations are Buhangin Fire Station, Bunawan Fire Station, Cabantian Fire Station, Calinan Fire Station, Lanang Fire Station, Mintal Fire Station, Panacan Fire Station, Talomo Fire Station, Toril Fire Station, Bangoy Fire Station, Bucana S.I.R. Fire Station, Bajada Fire Station, Sasa Fire Station, SPMC Fire Station and the Central Office. The Central Office of the fire stations in Davao City is located in Alvarez Street, Poblacion District, Davao City.

An adapted survey questionnaire was used in the study to gather data. A five-point Likert scale was utilised to elicit respondents from the participants. The questionnaires are developed based on different instruments that have been used in past studies to measure the stress and quality of services. The 5.00-4.50 range of mean with a descriptive rating of very high means that the indicator described in the statement has a very high influence on the variable. The 4.49-3.50 range of mean with a descriptive rating high means that the indicator described in the statement has a high influence on the variable. Moreover, the 3.49-2.50 range of mean with a descriptive rating fair means that the indicator described in the statement has an average influence on the variable. The 2.49-1.50 range of mean with a descriptive rating low means that the indicator described

in the statement has a low influence on the variable. The 1.49-1.00 range of mean with a descriptive rating of very low means that the indicator described in the statement has a very low influence on the variable.

The data collection method used in this study was to procure the data for the research. The aim of data collection in conducting scientific research is to gain the necessary material for the research. The researchers first obtained an approval form from the Dean of Criminal Justice Education of the University of Mindanao as well as from the adviser, validators, and the subjects of the study in the second week of September. In addition, the researchers asked permission to conduct the study through a letter of permission to conduct the study. It was further authorised by their research adviser in the third week of September. In the first week of October, the researcher obtained the approval letters of the head of the office. The letters provide permission that the researcher reserved. Head consent was also distributed before the researchers conducted their data collection at the fire station in Davao City. The respondents received the consent form during the data collection process.

Moreover, before distributing the survey questionnaire, the researchers first elaborated on the rationale of such activity so that the respondents could understand its purpose entirely. The respondents were given a couple of minutes to answer the questionnaire. The papers were collected after the time given to the respondents. This would be in the second week of October. Finally, the gathered data were tallied and analyzed. The complete chapters of the study were finalised, and revisions were made when necessary.

Lastly, this part of the study will be used to perform a statistical analysis. By using descriptive and inferential statistics, the collected data is statistically analyzed. Mean was used to determine the level of stress and quality of services of BFP. Specifically, it seeks to answer objectives number 1 and 2. Pearson r was employed to describe a significant relationship between stress and the quality of services for firefighters. Interpretations would be based on a 0.05 level of significance. Specifically, it seeks to answer objective number 3. In testing the hypothesis, the results from the correlation data are used to employ the decision of such hypothesis. Further, the P-value generated from the correlated data was used specifically to determine the level of significance.

## **4. Results and Discussion**

This section contains the results, discussion, and interpretation of the data. This consists of results that are arranged according to the objectives of this study. Tables are utilised in order to provide a better presentation of the data.

### **4.1 Summary of Occupational Stress of Firefighter Personnel**

As shown in Table 1, it appears that the responses of the respondents generated an overall mean of 3.91, which is described as fair among firefighters during the pandemic. This means that the variable described is average. Role ambiguity has the highest mean of

4.33, which is described as high, followed by workload, which has 4.10, which is described as high. It is followed by role conflict, which has 4.03, which is described as high. However, under-utilization of skills has the lowest mean of 3.18, which is described as fair. This implies that during the pandemic, the firefighter's personnel are not really stressed. Due to the challenges brought by the pandemic, some of their task were not affected where they could meet the expected work from them.

**Table 1:** Level of Occupational Stress of Firefighter Personnel

Indicators	Mean	Std. Deviation
Role Ambiguity	4.33	0.615
Work Overload	4.10	0.611
Role Conflict	4.03	0.741
Under Utilization of Skills	3.18	1.008
<b>Overall</b>	<b>3.91</b>	<b>0.513</b>

This outcome is consistent with the research of Khatak *et al.* (2011), who discovered that role ambiguity had a negative and substantial 13 association with work satisfaction and that work-related stress played a moderating role in this relationship. Additionally, Usman *et al.* (2011) showed that role ambiguity significantly reduced work stress. Role ambiguity refers to a lack of clarity or uncertainty in understanding one's job responsibilities and expectations. Ram *et al.* (2011) conducted research in Pakistan that showed role ambiguity and conflict to be beneficial and strongly associated with job stress. The data allows the researchers to examine the indicators of occupational stress of firefighters during the COVID-19 pandemic, with the highest mean, lowest mean, and overall mean, providing insights into the most significant indicators and overall occupational stress.

## 4.2 Summary of Quality of Service of Firefighter Personnel

It appears in Table 2 that the responses of the respondents generated an overall mean of 4.55, which is described as very high among firefighters during the pandemic. Communication has the highest mean of 4.57, which is described as very high, followed by reliability at 4.55, which is described as very high. However, responsiveness has the lowest mean of 4.54, which is described as very high. This implies that the COVID-19 did not affect the quality of service of BFP.

**Table 2:** Level of Quality of Service of Firefighter Personnel

Indicators	Mean	Std. Deviation
Communication	4.57	0.408
Reliability	4.55	0.404
Responsiveness	4.54	0.412
<b>Overall</b>	<b>4.55</b>	<b>0.357</b>



This result agrees with the study by FEMA (2017) that well-planned and distributed emergency messages can help safeguard property, ensure public safety, speed up response times, encourage cooperation, boost public confidence, and reunite families. This result is in accordance with the study of Webster (2020), which states that the performance of an individual employee and those she/he works with is significantly impacted by her reliability. Unreliable employees have repeatedly shown that they cannot be counted on to work on time, fulfil emergency services, or do quality work. It became clear that an inconsistent employee could have a negative impact on a reliable employee's performance.

This paragraph highlights the use of data by researchers to analyze the quality of service provided by firefighters during the COVID-19 pandemic. The data allows the researchers to examine the indicators of the quality of service of firefighters during the COVID-19 pandemic, with the highest mean, lowest mean, and overall mean, providing insights into the most significant indicators and overall quality. The goal is to gain insights into the most significant indicators and to assess the overall quality of service provided by firefighters during the pandemic. Overall, this insight can be valuable for improving the effectiveness of the emergency response team.

### 4.3 Significant Relationship between Occupational Stress and Quality of Service

Table 3 presents the correlation between occupational stress and the quality of service of firefighters during the pandemic. The data allows the researchers to examine the significant relationship that exists between variables.

**Table 3: Significant Relationship on Occupational Stress and Quality of Service**

Variables Correlated	r-value	Verbal Description	df (n-2)	p-value	Decision
Occupational Stress vs Quality Service of BFP	0.202**	Weak Positive Relationship	298	0.000	Ho is rejected

**Note:** \*\*Correlation is significant at 0.01 level (2-tailed)

Table 3 shows the significant relationship between occupational stress and the quality of service of firefighters during the pandemic. The Pearson r-values is 0.202 and p value= .000, which is less than 0.05 level of significance, which means it is statistically significant. This means that there is a significant relationship between occupational stress and the quality of service of BFP during the pandemic. Therefore, the hypothesis is rejected. Mahdizadeh, Jaber, and Bonabi (2019) found that the mean and standard deviation of total occupational stress scores in the control group were high at the pretest and decreased to moderate levels at the post-test stage. The intervention group also showed high levels of stress at the pretest, but these decreased to moderate levels by the post-test stage. On the other hand, Mata and Jason (2017) conducted a study in NCR, revealing that the reliability, communication, and responsiveness were judged as unsuccessful, indicating that the present BFP NCR process with 150 responders is inefficient and does not meet the application requirements.

However, the general mean for tangibles is 2.52, which indicates that they are only somewhat successful. It is safe to say that the service tangibles of BFP NCR's weighted mean can be regarded as having the ability to meet at least the bare minimum needs. According to the data from the weighted average summary of BFP NCR service quality, the current BFP NCR procedure was deemed ineffective, with a total score of 2.29 for all the criteria. The aforementioned made it very evident that a new method for handling applications for fire safety certificates was required. The BFP NCR front-line services section will provide better services thanks to the new system.

## **5. Recommendations and Conclusions**

This section discusses the findings, conclusions, and recommendations drawn by the researchers from the obtained results. Based on the study's findings, occupational stress is fair, while the quality of service is very high. Therefore, during the pandemic, firefighters personnel were not really stressed, and if they felt a little bit stressed, it could not affect the quality of their service to the community. There is a significant relationship between occupational stress and the quality of service of BFP during the pandemic. Therefore, the hypothesis is rejected.

Based on the results of the study, the following are recommended: The researchers recommend comparing the level of occupational stress before the pandemic and during the pandemic. The researchers recommend conducting the study of occupational stress on firefighters during the pandemic in areas that are prone to high COVID-19 cases. The researchers recommend that the community organise an event to appreciate and recognise firefighters, where they can personally thank them for their service. Use social media platforms or local newsletters to share stories of local firefighters, their achievements and the impact they make in the community. Spotlighting their heroic efforts can help raise awareness and further appreciation for their work.

The researchers also recommend that the Bureau of Fire Protection offer wellness programs. Implement wellness programs that focus on physical and mental health. This can include organising exercise classes, providing access to the gym facilities, or offering mindfulness training and relaxation techniques to help alleviate stress. Celebrate individual and team accomplishments within the office. Acknowledge and reward exceptional performance, promotions, and years of service to boost morale and motivation.

The researchers recommend to the University to provide mental health support to firefighters. The nature of firefighting can be mentally and emotionally taxing. Schools and Universities should prioritise mental health support services for firefighters, including access to counselling or therapy, peer support programs and stress management resources. The researchers also recommend that the university offer ongoing professional development and training. Encourage continued professional development by providing educational opportunities and training for firefighters. This

can include certifications, workshops, conferences, and seminars to keep firefighters updated with the latest firefighting techniques and strategies.

Future researchers or students who wish to study firefighters should start exploring existing literature, academic journals, research papers, and books on firefighters. This will help you comprehensively understand the subject, identify research gaps, and avoid duplicating existing studies. We also recommend using online survey forms instead of a physical survey questionnaire, and we recommend that future researchers also involve fire volunteers in the study as they also engage in firefighting activities and jobs like in the fire bureau of the government.

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### **Conflict of Interest Statement**

The authors declare no conflicts of interest. The authors are dedicated to upholding the highest ethical and research standards. Per these standards, any potential conflicts of interest that may arise during the study will be promptly disclosed and managed to ensure the impartiality, transparency, and integrity of the research outcomes. This declaration is intended to underscore our commitment to transparency and maintaining research integrity throughout the study.

### **Conflict of Interest Statement**

The authors declare no conflicts of interest.

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