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ASSESSMENT OF JOB STRESS AND SAFETY BEHAVIOUR OF WORKERS IN SELECTED FOOD MANUFACTURING COMPANIES IN RIVERS STATE

OKODUGHA, GABRIEL O.[1] UGWOHA, E.[2] & ORIKPETE, O. F[3].
[1,2 and 3;] Centre for Occupational Health, Safety and Environment, Institute of Petroleum Studies, Faculty of Engineering, University of Port Harcourt, Rivers State, Nigeria
[2,] Department of Civil and Environmental Engineering, University of Port Harcourt, Rivers State, Nigeria
Lead Authors Email; gabrielokodugha2@gmail.com

Abstract

This study assessed job stress and safety behavior of workers in food manufacturing companies in the Rivers State, Nigeria. Descriptive and inferential research designs were adopted. Job stress was captured using workload stress, job security stress and work-family conflict stress while safety behaviour was operationalized using safety participation and safety compliance. Four main group of food manufacturing companies operating in River State namely bakeries and confectioneries, food processing companies, soft drinks, beer and alcoholic beverages and water bottling companies. Purposive sampling technique was adopted in which two companies from the four groups of food manufacturing companies sampled and 430 workers were selected. The instrument for data collection was a well-structured questionnaire designed based on five-point Likert scale while descriptive, correlation and regression statistical analysis were the methods adopted for data analysis. The results of the descriptive statistics revealed that there is substantial high level of job stress among the workers (WA = 3.14 > 3.00) and there is high level of good safety behaviour among the workers (WA=3.31>3.00). Correlation analysis showed that that workload stress, job security stress, work-family conflict stress as well as overall job stress has significant relationship with safety participation (r = 0.207, -0.268, -0.260-0.385, p = 0.000 respectively less than 0.05 significance level) and safety compliance (r = 0.198, -0.096, -0.146, -0.356. p = 0.001, 0.008, 0.008 and 0.000 respectively less than 0.05 significance level). It was concluded that job stress has significant relationship with safety behaviour.

Keywords:

Job Stress, Safety Behaviour, Food Manufacturing Companies, Rivers State.

1 INTRODUCTION

Globally, food manufacturing companies are considered vital to economic growth and are increasingly important for sustainable development of any nation. On the basis of the enumerated roles played by food manufacturing firms in fostering growth as evidenced in developed and few emerging economies, one can clearly posit that food manufacturing firms are one of the major sources of economic propeller through the production and export

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contribution. The Nigerian food manufacturing industry holds much significance for the social and economic development of nation as reports from National Bureau of Statistics (2019) which revealed that the sector contributed about 7% of the total GDP in 2018. However, the growth, performance and productivity of Nigeria's food manufacturing firms have deteriorated at present (Sangosanya & Awoyemi, 2016) and one of the major reasons behind the deterioration of the growth and productivity of the food manufacturing companies in Nigeria is their poor perception and attitude toward safety behavior expressed in poor safety compliance and safety participation leads to poor safety performance which in turn triggers several cases of accidents, loss of man-hour, equipment damage and sometimes death. These poor safety compliance and participation cold be linked to extended and excessive job stress.

Generally, stress is a normal part of life. In small amount, stress is good; it can motivate you and help you become more productive (Bono et al., 2017). However, too much stress, or a strong response to stress can be harmful. How a stress provoking event is perceived and how people react to it, determine its impact on our health. Some individuals may be motivated and invigorated by the events in our lives, or they might see some as stressfull and respond in a manner that may have a negative effect on our physical, mental, and social well-being (Bosma et al, 2018). If people always respond in a negative way, their health and happiness may suffer. By understanding oneself and their reaction to stress-provoking situations, one can learn to handle stress more effectively (Bosma et al., 2018). In the most accurate meaning, stress management is not about learning how to avoid or escape the pressures and turbulence of modern living; it is about learning to appreciate how the body reacts to these pressures, and about learning how to develop skills which enhance the body's adjustment. To learn stress management is to learn about the mind-body connection and to the degree to which we can control our health in a positive sense ((Bosma et al., 2018; Boro et al., 2017)

Job or occupational stress has been of great concern to employees and other stakeholders of any organizations. Occupational stress researchers agree that stress is a serious problem in many organizations, and the common forms of job stresses are work-related stress, job insecurity stress and stress due to family-work conflict (Cooper & Cartwright, 2014; Varca, 2009; Ornelas & Kleiner, 2009). The cost of occupational stress is very high in many organizations in recent times. For instance, the International Labour Organization (ILO) reports that inefficiencies arising from occupational may cost up to 10 percent of a country 's GNP. Occupational stress is defined as the perception of a discrepancy between environmental demands (stressors) and individual capacities to fill these demands (Christo & Pienaar 2006; Ornels & Kleiner, 2009; Topper, 2007; Varca, 2009; Vermut & Steensma, 2005) for example, argued that the causes of occupational stress include perceived loss of job, and security, sitting for long periods of time or heavy lifting, lack of safety, complexity of repetitiveness and lack of autonomy in the job.

In addition, occupational stress is caused by lack of resources and equipment; work schedules (such as working late or overtime and organizational climate are considered as contributors to employee's stress. Occupational stress often shows high dissatisfaction among the employees, job mobility, burnout, poor work performance and less effective interpersonal relations at work (Manshor et al., 2003). Johnson (2001) similarly argued that interventions like identifying or determining the signs of stress, identifying the possible causes for the signs and developing possible ascertaining the effect of these stresses on the behaviour, performance and condition of workers as well as proposing possible solutions for each sign are crucial.

Safety behaviour is defined as the individuals' behaviours to promote health and safety of their own and the working environment (Burke et al., 2019). Worker's safety behaviour is the way the individual worker reacts to safety-related situations in the workplace. There is need for workers to behave in a sensible manner in workplace not only to gain appreciation and respect from others and management but also to maintain a safe and healthy workplace. Worker in food manufacturing firms are always required to carry out safety behaviour on-site. An individual performing such safety behaviour should not only avoid taking any risks or shortcuts, but must also comply with safety rules and procedures during the process (Hsu et al., 2018; Marchand et al., 2012). It is widely recognized that the majority of accidents are caused by poor safety behavior either in terms of safety compliance, or safety participation or both (Mearns et al., 2017). This is often cited as one of the most important causes of accidents (Haslam et al., 2015).

Researchers have shown much interest in interaction between safety behaviour of workers and other indicators such as job stress because of the importance of safety behaviuor in assessing leading safety performance in any firm (Clarke, 2016; Neal et al. 2012). At individual safety performance level, the focus of any firm is to enhance the employee safety behaviour. However, long-term exposure to job stress can cause workers to develop negative emotions such as anxiety, stress, and depression, also, job stress can reinforce employees' feelings of exhaustion and negatively affect physical health, thus contributing to poor safety behaviors. There have been numerous studies that have confirmed the negative impact of work stress on workers' safety behaviors (Leung et al., 2016; Liang et al., 2022; Wu et al., 2018). However, these studies focused on physiological safety behaviours and psychosocial hazards which arise when job stress is not effectively managed. The effect of job stress on safety behaviour can be considered a prior indicator to assess the safety performance of workers in food manufacturing firms. Therefore, there is need to evaluate the job stress and safety behaviour and also investigate the relationship between the job stress and the safety behaviour of workers in food manufacturing firms particularly in River State.

2. METHODOLOGY

2.1 Study Area

Rivers State, also known as Rivers, is a state in the Niger Delta region of southern Nigeria, formed in 1967, when it was split from the former Eastern Region, Rivers State borders includes; Anambra and Imo on the north, Abia and Akwa Ibom on the eastern part and Bayelsa and Delta on the west. The state capital, Port Harcourt, is a metropolis that is considered to be the commercial centre of the Nigerian oil industry. With a population of 5,198,716 as of the 2006 census, Rivers State is the 6th most populous state in Nigeria. Rivers State is a diverse state that is home to many ethnic groups, the majority being Igbo, but also including the Ogoni and Ijaw. The state is particularly noted for its linguistic diversity, with 28 indigenous languages being said to be spoken in Rivers State, dominant of which, are the Igbo speaking groups, the Ogoni and Ijaw languages. Rivers State has a total area of 11,077 km^2 (4,277 sq mi) making it the 26th largest state by area and its geography is dominated by the numerous rivers that flow through it, including the Bonny River.

The economy of Rivers State is dominated by the state's booming petroleum industry and some manufacturing companies. Although the rise of the oil industry has led to increased revenue for the state government, mismanagement and corruption have prevented the state from rapid development and meaningfully tackling poverty. During the 2000s, Rivers State saw a rise in the number of cult killings committed within the state. In 2019, Governor Ezenwo Nyesom

wike declared Rivers State to be a Christian state because it is made up of 90% Christians and 10% orthodox with few strangers practicing Islam unconventionally. Rainfall is generally seasonal, variable, as well as heavy, and occurs between the months of March and October through November. The wet season peaks in July, lasting more than 290 days. The only dry months are January and February which have little to no effect

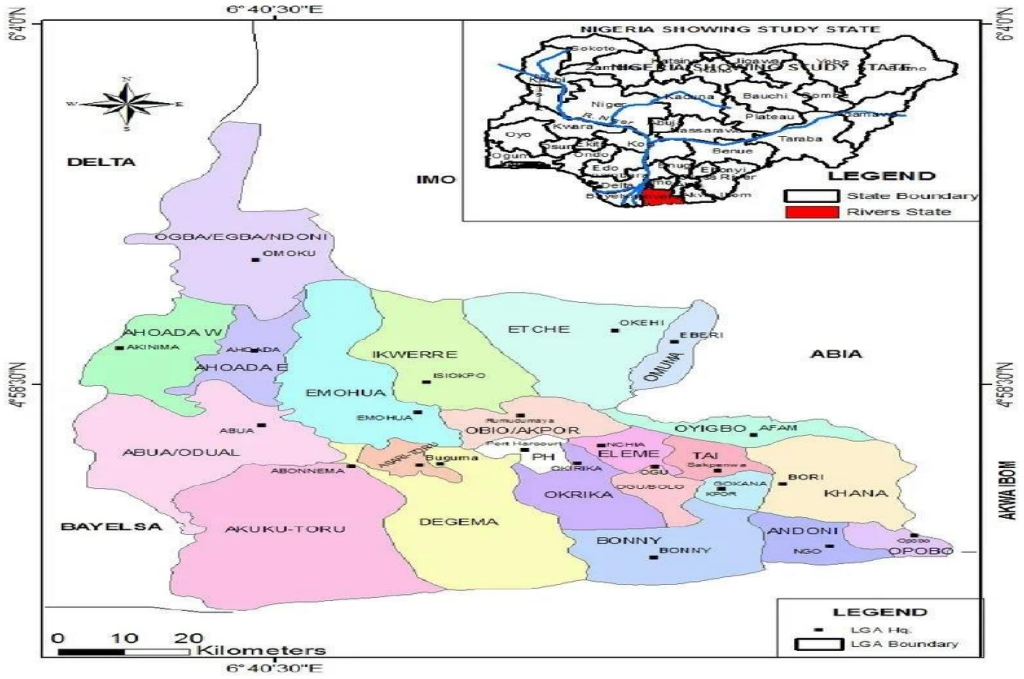


Figure 1. Map of River State Showing the 23 Local Government Areas

2.2 Population, sample technique and sample size determination

The population of this study comprised of all the workers in all the food manufacturing companies operating in Rivers State. Based on the reports of the River State Inland Revenue Commission, there are four main group of food manufacturing companies operating in River state and they are Bakeries and Confectioneries (6), Food Processing Companies (10), Soft Drinks, Beer and Alcoholic Beverages (3) and Water, Spring and Bottled food companies (19). Hence, the population of the study comprised of workers in the 38 registered food manufacturing companies operating in Rivers State. Based on the RSIRC report, there are over 15,800 workers in the 38 registered food manufacturing company in Rivers State which made up the population of this study

The study adopted purposive sampling technique. This involve selecting two companies from the four groups of food manufacturing companies operating in Rivers State based on proximity and accessibility. The sampled companies are Amins Cakes and Confectioneries, Nibble bakery and Confectioneries, DUFIL Prima Foods Limited production company, UAC foods PLC, Coca-Cola Bottling company Port Harcourt, Seven-up Bottling Company Port Harcourt, CWAY Port Harcourt Co. LTD and BIGI Foods Port Harcourt

Based on the RSIRC report (2022), there are over 15,800 workers in the 38 registered food manufacturing company in Rivers State. Thus, sample size was determined (or calculated)

using a scientifically recognized equation. Thus, this study used the Taro Yamane mathematical equation illustrated as:

$$n = \frac{N}{(1+N(\varepsilon)^2)} \quad (1)$$

In which n is the sample size, N is the population of the study and ε is the margin error (0.05). Thus, for an estimated total sampled population of 15,800 employees, the sample size for this study, assessed at a margin error of 0.05 level of significance, can be calculated using equation (1) as shown Thus $n = = 390$

From the result above, a total of 390 workers forms the basic sample size for this study. To accommodate for possible error due to sampling processes bias in study the sample size is increased by 10% of basic sample size which is 39, hence the current sample size for the study is approximately 430 respondents. The workers were selected from the eight selected companies sampled for this study. Thus, the sample size will be equally allotted among the eight sampled companies

2.3 Method and instrument for Data Collection

Quantitative data was used as provided by the respondents using questionnaires. the respondents were sampled food manufacturing workers in the selected food manufacturing companies operating in Rivers State. A print copy of the questionnaires was administered to the respondents. The questionnaires will be administered on a one-on-one basis. The respondents were giving time to fill and return the completed questionnaires. The questionnaires comprised of close-ended questions which was rated on a 5-point Likert scale, as well as questions on socio-demographic profiles of the respondents. This process of data collection is expected to take few weeks or month depending on the availability of the respondents.

The instrument for data collection was a well-structured questionnaire. The questionnaire was explained to the respondents before they are administered to them in order to get their honest response. The questionnaire was used to obtain response of workers in food manufacturing companies on the levels of various indicators of job stress and nature of safety behavior in the workers. Therefore, the questionnaire was titled "Questionnaire on Job Stress and Safety Behavior (QJSSB)" and comprised of three sections: A and B. Section A was used to capture the responses of the respondents on the various indicators of job stress in their companies while Section B was used to capture their responses on the safety behavior. Please, note that section A and B have sub-section designed to capture the construct that operationalized the concepts used in this study.

2.4 Method and Instrument for data Analysis

The descriptive statistical analysis (means, percentages, weight average, and bar-chart), correlation and regression are the methods that was used in the analysis. Descriptive statistic was used to answer research questions check level of job stress and safety behaviour. This statistical technique is appropriate because it involves quantifying the response and opinion of the respondents on the levels of job stress and safety behaviour in the selected food manufacturing firms. while Pearson correlation analysis was used to investigate relationship between job stress indicators and indicators of safety behaviour of the workers in the sampled food manufacturing companies operating within Rivers State. The analysis was done using Statistical Product Service Solution (SPSS)

3. RESULTS AND DISCUSSIONS

3.1 Level of job stress experience by workers in selected food manufacturing companies in Rivers State

Table 1 shows the summary of the responds of the sampled workers on the level of job stress experienced by the workers in the companies. In this assessment job stress was operationalized with three latent constructs, namely workload stress, job security stress and family-work conflict stress, and each of these latent constructs were captures using four (4) items each which make it twelve (12) items used to capture or operationalize job stress experience.

The first four items captured workload stress and from the results of the weighted average it could be observed that the workers agreed to of the first three and disagreed to the fourth item which in general implied that that there is substantial level of workload stress among the workers in the workplace. On job security stress, the results of the weighted average showed that majority of the workers also agreed to the first three items and disagreed to the fourth item which suggest that most of the workers have substantial level of stress occasioned by job insecurity in the workplace while on family-work conflict stress, majority of the workers agreed to first and fourth item while disagreeing to second and third item concerning family-work conflict stress which means that the workers are undecided or split on issues concerning family-work conflict.

On overall, the total weighted average results revealed that majority of the workers accept the presence of job stress in the workplace. The findings aligned with the works of Lu et al. (2023), Mei-Leung et al. (2015), Clarke (2012) carried out study to investigate the relationships between job stressors and safety behavior and discovered high level of job stress among workers in construction and oil and gas industry.

Table 1: Level of job stress experience by workers in selected food manufacturing companies in Rivers State

SN							WA	R
	Workload Stress	**SA**	**A**	**D**	**SD**	**UN**		
1	My job is complex and has high workload	160.00 40.47%	110.00 27.40%	29.00 6.26%	33.00 7.3%	76.00 18.53%	3.64	Agree
2	I worry about my personal safety due to high workload	131.00 35.30%	115.00 30.60%	42.00 10.30%	19.00 3.9%	76.00 20.30%	3.55	Agree
3	I usually work overtime in my workplace	175.00 47.20%	49.00 12.20%	42.00 10.00%	37.00 9.20%	80.00 21.4%	3.52	Agree
4	I am worried about being accountable for excessive and high workload work	82.00 44.20%	35.00 8.20%	55.00 13.90%	47.00 12.20 %	164..00 21.40%	2.51	Disagree
	Job Insecurity Stress							
5	I could be without this job at any time	150.00 40.20%	40.00 8.20%	53.00 11.50%	50.00 11.8%	90..00 22.70%	3.28	Agree
6	I am not very sure of being able to keep this job.	125.00 33.20%	115.00 30.60%	42.00 10.30%	25.00 5.50%	75.00 20.30%	3.49	Agree
7	I am uneasy about my future job income and opportunities.	145.00 40.00%	35.00 8.20%	50.00 12.10%	50.00 12.1%	83..00 22.50%	3.13	Agree
8	I may lose this job in the near future	75.00 36.01%	49.00 12.20%	48.00 11.90%	65..00	135.00 21.4%	2.55	Disagree

					17.20 %			
	Family-Work Conflict Stress							
9	I hardly take good care of family due to excessive workload	125.00 33.20%	115.00 30.60%	42.00 10.30%	25.00 5.50%	75.00 20.30%	3.49	Agree
10	My family does not understand and support my work enough.	75.00 36.01%	49.00 12.20%	48.00 11.90%	65..00 17.20 %	135.00 21.4%	2.55	Disagree
11	My financial income is not enough to cover the heavy family burden	82.00 44.20%	35.00 8.20%	55.00 13.90%	47.00 12.20 %	164..00 21.40%	2.51	Disagree
12	I hardly support by family socially and emotionally due to excessive workload	125.00 33.20%	115.00 30.60%	42.00 10.30%	25.00 5.50%	75.00 20.30%	3.49	Agree
	TOAL						**3.14**	**Agree**

3.2 Level of safety behaviour of workers in selected food manufacturing companies in Rivers State

Table 2 shows the summary of the responds of the sampled workers on the level of safety behavior of the workers in the companies. In this assessment safety behavior was operationalized with two latent constructs, namely safety participation and safety compliance and each of these latent constructs were captures using four (4) items each which make it eight (8) items used to capture or operationalize safety behavior.

The first four items captured safety participation and from the results of the weighted average it could be observed that the workers agreed to three item and undecided to the fourth item which in general implied that there is substantial level of safety participation among the workers in the workplace. The last four items captured safety compliance and from the results of the weighted average. It showed that majority of the workers also agreed to the three items and disagreed to the fourth item which suggest that most of the workers have substantial level of safety compliance in the workplace. On overall, the total weighted average results revealed that majority of the workers accept that there is substantial level of safety compliance among the workers in the workplace

The findings aligned with the works of Clarke (2012) who carried out study to investigate the relationships between job stressors and safety behavior and discovered high level of safety behviour among workers in oil and gas industry. The results contradict the findings of Lu et al. (2023) and Mei-Leung et al. (2015), who carried out study to investigate the relationships between job stressors and safety behavior and discovered low level of safety behviour among workers in construction industry

Table 2: Level of safety behaviour of workers in selected food manufacturing companies in Rivers State

SN	Safety Participation	SA	A	D	SD	UN	WA	R
1	I help my co-workers when they are working under risky or hazardous conditions	150.00 41.7.%	100.00 27.80%	19.00 5.30%	23.00 6.40%	68.00 18.80%	4.00	Agree
2	I put extra effort to improve the safety of the workplace	120.00 8.10%	70.00 23.10%	3.00 25.60%	70.00 3.9%	120.00 39.40%	3.00	Undecided
3	I voluntarily carryout tasks or activities that help to improve workplace safety	155.00 40.47%	105.00 27.40%	24.00 6.26%	28.00 7.3%	71.00 18.53%	3.64	Agree
4	The good safety communication between management and workers has encouraged me be to safety conscious personally	131.00 35.30%	115.00 30.60%	42.00 10.30%	19.00 3.9%	76.00 20.30%	3.55	Agree
	Safety Compliance							
5	I use all necessary safety equipment to do my job	145.00 40.00%	35.00 8.20%	50.00 12.10%	50.00 12.1%	83..00 22.50%	3.13	Agree
6	I carry out my work in a safe manner	75.00 36.01%	49.00 12.20%	48.00 11.90%	65..00 17.20%	135.00 21.4%	2.55	Disagree
7	I ensure the highest levels of safety when I carry out my job	125.00 33.20%	115.00 30.60%	42.00 10.30%	25.00 5.50%	75.00 20.30%	3.49	Agree
8	The availability of sufficient people who are willing to work based on HSE procedures has motivated me to comply with safety rules	145.00 40.00%	35.00 8.20%	50.00 12.10%	50.00 12.1%	83..00 22.50%	3.13	Agree
	TOAL						**3.31**	**Agree**

3.3. Correlation analysis results on the relationship between job stress and safety behaviour of workers in selected food manufacturing companies in Rivers State

Table 3 shows the results of the Pearson correlation analysis carried out as preliminary analysis to investigate the relationship between job stress indicators and safety behavior indicators. The results showed that there is positive and significant relationship between safety participation (SP) and workload-related stress (WS) with correlation coefficient of 0.207 and significant level of 0.000, and negative and significant relationship with job security stress (JSS), work-family conflict stress (WFCS) and overall job stress (JS) with correlation coefficient of -0.268, -0.260 and -0.385 respectively and significant level of 0.000 each. These results implied that increase in workload resulted to corresponding increase in safety participation while increase in job security stress, work-family conflict stress and overall job stress results to corresponding drop in safety participation. This means that workload stress is positive activator of safety participation while job security stress and work-family conflict stress are negative activator of safety participation whereas overall job stress showed negative activation for safety participation.

The results also showed that there is positive and significant relationship between safety compliance (SC) and workload-related stress (WS) with correlation coefficient of 0.198 and significant level of 0.000, and negative and significant relationship with job security stress (JSS), work-family conflict stress (WFCS) and overall job stress (JS) with correlation coefficient of -0.096, -0.146 and -0.356 respectively and significant level of 0.019, 0.001 and

0.000 respectively. These results entail that increase in workload resulted to increase in safety compliance while increase in job security stress, work-family conflict stress and overall job stress results to decrease in safety compliance. This means that workload stress motivated safety compliance of the workers while job security stress and work-family conflict stress reduce motivation of the workers towards safety participation whereas overall job stress also triggers drop in safety compliance.

The results on the overall safety behavior (SB) showed that there is positive and significant relationship between safety behavior (SB) and workload-related stress (WS) with correlation coefficient of 0.206 and significant level of 0.000, and negative and significant relationship with job security stress (JSS), work-family conflict stress (WFCS) and overall job stress (JS) with correlation coefficient of -0.151, -0.121 and -0.491 respectively and significant level of 0.001, 0.010 and 0.000 respectively less than 0.05 significant level. These results also mean that increase in workload resulted to increase in overall safety behviour of the workers while increase in job security stress, work-family conflict stress and overall job stress results to decrease in safety behavior of the workers. This means that workload stress motivated safety behavior of the workers while job security stress and work-family conflict stress reduce motivation of the workers towards safety behavior whereas overall job stress also triggers drop in safety behviour of the workers.

The findings also aligned with the works of Lu et al. (2023) who carried out study to examine the effects of three job stressors (the job itself, job insecurity, and family-work conflict) on psychosocial safety behavior sub-dimensions (psychosocial safety compliance and psychosocial safety participation), using psychological resilience as a mediating variable.. The results showed that there were positive and negative effects between the three job stressors, psychosocial safety behavior sub-dimensions, and psychological resilience.

These findings aligned with the works of Clarke (2012) who carried out study to test the relationships between occupational stressors (challenge and hindrance), safety behaviors (compliance and participation), and safety outcomes (occupational injuries and near-misses). He hypothesized that hindrance stressors such as job security stress and work-family conflict stress would have negative effects on both safety compliance and safety participation, and subsequently, safety outcomes, whereas challenge stressors such as workload stress would have positive effects. His results revealed that the hypotheses relating to hindrance stressors were supported, suggesting that hindrance stressors lead to a significant reduction in both compliance with safety rules and participation in safety-related activities, and that hindrance stressors were also associated with higher levels of occupational injuries and near-misses. The results also showed that relationship between hindrance stressors and occupational injuries was fully mediated by safety behaviors. However, the hypotheses related to challenge stressors were not supported. Challenge stressors had a no significant, near-zero association with compliance and occupational injuries, a small negative association with participation, and a small positive association with near-misses.

Table 3: Pearson correlation preliminary analysis results

		WS	JSS	WFCS	JS	SP	SC	SB
SP	Pearson Correlation	.207**	-.268**	-.260**	-.385**	1	.322**	.331**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	408	408	408	408	408	408	408
SC	Pearson Correlation	.198**	-.096	-.146**	-.356**	.322**	1	.392**
	Sig. (2-tailed)	.000	.019	.001	.000	.000		.000
	N	408	408	408	408	408	408	408
SB	Pearson Correlation	.206**	-.151**	-.121**	-.491**	.331**	.392**	1
	Sig. (2-tailed)	.000	.001	.010	.000	.000	.000	
	N	408	408	408	408	408	408	408

*. Correlation is significant at the 0.05 level (2-tailed).

4. CONCLUSIONS

Based on the findings of this study, the following conclusions were drawn; one, there is high level of job stress among workers in the food manufacturing firms in Rivers due to high level of workload stress, job insecurity stress and work-family conflict stress among the workers. Two, there is good safety behviour among the workers in the food manufacturing firms in Rivers due to high level of safety participation and safety compliance among the workers and lastly job stress has both positive and negative significant relationship with safety behaviour as workload stress has positive relationship with safety behviour acting as challenge or motivation stress and job insecurity and work-family conflict stresses have negative relationship with safety behaviour acting as hindrance stresses.

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