

Healthcare Maintenance and Risk Assessment/Hazard Identification: Evidence from Port Harcourt Seaport

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Abstract

This study examined the relationship between Healthcare Maintenance and Risk Assessment/Hazard Identification of Maritime Transport Workers in Port Harcourt Seaport. The aim and objectives was to examine if there is any relationship between Healthcare Maintenance and Risk Assessment/Hazard Identification of Maritime Transport Workers. Three research questions and null hypotheses were formulated to examine the relationship between the Dependent and the Independent Variables. A sample size of 176 workers was selected from the population of 315 workers in Port Harcourt Seaport using the Taro Yamane sampling procedure. Simple Percentages, Frequency Tables, Bar Charts and Spearman Rank Correlation Coefficient were used as data analysis and techniques. The study found a correlation coefficient of 0.708(rho value) between National Health Insurance Scheme and Risk Assessment and Hazard Identification, 0.876(rho value) between Monitoring/Regulating Healthcare Giver and Risk Assessment /Hazard Identification and 0.709 (rho value) between Healthcare Financing and Risk Assessment/Hazard Identification. From the findings, the study conclude that Healthcare Maintenance have positive and significant relationship with Risk assessment and identification of Maritime Transport Workers in Port Harcourt Seaport. The study, therefore recommends that government should give prominent attention to collective agreement, conditions of service and implementation of Healthcare Management Systems such as the National Health Insurance Scheme. Implementable policies should be put in place to monitor and regulate Healthcare Givers to avoid ill performance and decrease workplace hazard among the Maritime Transport Workers in the Seaports, adequate provisions should be made in financing all healthcare activities in the Seaports. Healthcare Financing should be integrated in relevant laws such as the federal government appropriation bills as this will simplify the easy source of financing healthcare projects in the Port to minimize marine incident/accident and workplace hazards.

Keywords: Healthcare Maintenance, Risk Assessment, Hazard Identification, Port Harcourt Seaport

Introduction

Nigeria is a coastal nation endowed with a large stretch of inland navigable waters stretching over 10,000 km. The navigable inland water comprises of rivers, lakes, lagoons, creeks and intra-coastal waters (Aderemo & Mogaji, 2010). Inland water transportation provides a cost-effective, logistically efficient and environment friendly mode of transport whose development as a supplementary mode enables diversion of traffic from over-congested roads and railways, and it contributes to economic and social development (Ojile, 2006; Obeta 2014). This implies that healthcare maintenance and safety of maritime transport attract both national and international attention. Government and companies has overall responsibility to establish a safety management system and occupational health and safety policies and programmes.

Occupational health and safety is the anticipation, recognition, evaluation and control of hazards arising in, or from, the workplace that could impair the health, safety and well-being of workers. The National Health Insurance Scheme Act 2014 was design for easy access to healthcare for all Nigerians while The Nigeria Maritime Administration and Safety Agency (NIMASA) Act 2007, Coastal and Inland Shipping (Cabotage) Act 2003, The Merchant Shipping Act 2007, The Maritime Labour Convention (MLC) 2006, and The Maritime Labour Department are mandated to regulate the Implementation of Seafarers and Dockworkers Employment, Health and Safety standards in relation to the provision of Maritime Labour in Nigeria and ensures that Maritime Labour Employers comply with existing regulations and standards relating to crewing, wages, safety, welfare and training and retraining of staffs at Ports and Onboard Vessels.

The maritime working environment comprises the physical, ergonomic, chemical, biological, psychological and social elements which could lead to occupational accidents, injuries and diseases. Maritime transport workers face demanding working conditions, isolation, long hours of work, rigid organizational structures and high levels of stress and fatigue. Historically, safety of the vessel, its cargo, passenger and crew has been of great concern since vessels started going to sea and the advent of world trade. Healthcare Maintenance and Safety of Maritime Transport Workers are a global phenomenon and so also are the laws and regulations aimed at ensuring safety (Bloor, Thomas & Lane, 2018).

Maritime transport workers have the right and expectation that they will remain safe at work. The government, companies and employers have the responsibility to ensure the health, safety and welfare of maritime transport workers. Seafarers and dockworkers have a duty to take reasonable care for the occupational health and safety of themselves and others by creating a culture where everyone takes responsibility for a safe working environment and takes care of themselves and one another, many work-related accidents and incidents can be avoided (Bluff, & Johnstone, 2015). Extensive research has identified certain elements that contribute greatly to maintaining a safe working environment which include clearly defined expectations, good communications, clear leadership, good planning, risk awareness, accountability, good safety culture and effective knowledge management (Ellis, 2017).

Healthcare Maintenance and Safety of Maritime Transport Workers is incorporated as a goal of the organization, which is emphasized independently of external regulations, and safety performance is measured along with other aspects of activities in the ports. Technical and procedural solutions constitute the core of safety management but behavioral aspects are receiving growing attention (Frick & Wren, 2020). The mission statements of contemporary shipping companies and government are that of health, safety, environment and safe transportation. The very same conception is also headlining the web pages of organizations such as the International Maritime Organization (IMO). This implies that healthcare maintenance and safety of maritime transport workers is a maxim of the maritime industry.

According to Gallagher (2019) the apparent interest in healthcare maintenance and safety of marine transport workers is evident in contemporary history that maritime disasters involving large numbers of passengers or the escape of polluting substances may have a substantial impact on society at large. The nature of seaborne transportation also implies that the enormous assets

tyed in a vessel and its cargo may be jeopardized in one single shipment (Gallagher, Underhill & Rimmer, 2021). This shipment is transported in one of the most treacherous environments that the planet has to offer with strong winds, turbulence seas and often at great distances from available means of assistance.

There are various policies and regulations to ensure healthcare maintenance and safety of maritime transport workers, the implementation of the ISM code is interesting from an organizational point of view as the enforced liability is higher commitment towards safety from the higher levels of management. Such a commitment is regarded by the International Chamber of Shipping and international Shipping Federation (1996) as vital for the successful implementation of a safety management system. Anderson (2005) emphasized that company unable to demonstrate such concerns face serious legal consequences if perils strike their vessels. From the above, this study wants to examine the relationship between Healthcare Maintenance and risk assessment of Transport Workers in Port Harcourt Seaport.

Aim and Objectives of the Study

1. To examine the relationship between compliance to national health insurance scheme and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport.
2. To study the relationship between monitoring/regulating healthcare giver and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport.
3. To evaluate the relationship between healthcare financing and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport.

Research Questions

From the above specific objectives, the following research questions are formulated:

- i. To what extent does compliance to national health insurance scheme relate to risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport?
- ii. What is the relationship between monitoring/regulating healthcare giver and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport.?
- iii. How does healthcare financing relate to and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport.?

Hypotheses

From the above research questions, the following null hypotheses are formulated:

H₀₁: There is no significant relationship between national health insurance scheme and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport.

H₀₂: There is no significant relationship between monitoring/regulating healthcare giver and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport.

H₀₃: There is no significant relationship between healthcare financing and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport.

Literature Review

Healthcare Maintenance

The healthcare services provided by hospitals have led to become very important buildings. Various facilities and equipment runs alternately to support the systems in the hospital building. Healthcare has different groups of stakeholder such as patients, public or visitor, administrative and medical staff. According to Loosemore and Hsin, as cited in (Ali, Mohamad, & Wan, 2009) it forms a complicated network that needs to look into and the complexity of many services that require high support as the main challenges in managing hospital facilities. Facility managers play an important role to forecasting the condition of the facilities on their experience and their different values, beliefs, perceptions and expectations. Hospitals are a vital component of the healthcare system (McKee & Healy, 2002) but they are an expensive way to deliver medical care (Shohet & Lavy, 2004).

Therefore, although hospitals deal with patients who cannot be treated elsewhere at the time when hospital treatment can still be effective (Shohet & Lavy, 2004), hospitals increasingly focus on critical short-term care. They only admit people who are in a serious condition which requires an intensive level of medical or nursing care or individual diagnoses and treatment (McKee & Healy, 2002). There are difficulties in forecasting hospital requirements into the future. The problem is most of the facility managers not participating in the briefing, designing and cost analyzing stages of new building developments (Shohet & Lavy, 2004).

Compliance to National Health Insurance Scheme

All countries face challenges in expanding healthcare coverage. Many countries have committed themselves to achieving equity in healthcare coverage by including healthcare goals in human rights declarations, constitutions, and health policy documents. Expanding health insurance is a strategy that countries use to alleviate the adverse health outcomes of all citizens, especially the poorest. It is one of the methods that low-income countries may consider to achieve universal health coverage (UHC). UHC implies ensured access to and use of high-quality healthcare services by all citizens, especially the poor, and protection for all individuals from the catastrophic financial effects of ill health. Nigeria, one of the few African countries to begin expanding health insurance over the past five years, seeks to achieve universal healthcare coverage by 2015.

The National Health Insurance Scheme (NHIS) offers programs to cover the formally employed, urban self-employed, tertiary students, armed forces, some pregnant women, children under five, and such populations as the disabled and prison inmates. Under the National Health Insurance

Act of 2008, in 2010, the NHIS started a rural community based social health insurance program (RCSHIP). The NHIS is going through a period of evaluation to review the benefit package for its members and the different modalities for contribution of premiums. As a priority, the Nigerian government would like NHIS to cover more of the population. Currently, based on the number of identification cards issued, NHIS covers about 5 million members, or 3 percent of the population. Several proposals to increase coverage include a proposal to make NHIS registration mandatory for federal government employees. At a broader level, Nigeria needs to examine the path it will take to achieve universal health coverage and the role health insurance may play in it. Nigeria will need to make crucial decisions if access and financial protection within the context of health are to expand to cover the majority of the population. Given the likelihood of the passage of the National Health Bill (SB 50, drafted in 2008) through the lower house of the National Assembly (Parliament) during 2013, Nigerian policymakers should now also consider the unfinished agenda for health financing.

Monitoring and Regulating Healthcare Givers

The history of regulating healthcare services in Nigeria dated back to 1927 when the Board of Medical Examiners (BME) was established by the British Colonial administration. From the BME, other regulatory agencies evolved at different times to the present thirteen health regulatory agencies that cater for the control and regulation of one healthcare profession or the other and as agencies of the Federal Government under the supervision of the Federal Ministry of Health.

The responsibilities of these health regulatory agencies under the leadership of their various Registrars are similar even though the healthcare focus of each of the professions is different. Essentially, they regulate and control the education, training, and practice of these healthcare professionals at the healthcare provider centers responsible for the provision of primary healthcare, secondary and tertiary healthcare services in health institutions. However, the registration and regulation of some facilities such as private and public hospitals is the responsibility of the state ministries of health of that state. The SMOH are responsible for the registration and supportive monitoring of such facilities.

The healthcare regulatory agencies also ensure the competencies of the practicing healthcare professionals are enhanced as per their skills, expertise, and competencies through mounting Continuing Professional Development (CPD) programmes in accredited provider centers, to keep them abreast of the current knowledge and practice related to their area. It has been reported that healthcare regulatory agencies are also the custodian of valid and valuable information with regards to the register of names, the performance of professionals, good professional practice, and records of premises where professional activities are taking place. Another vital role of such agencies is checkmating quackery of healthcare professionals and the professionals through registering and issuance of annual licenses and keeping the register of the names of such licensed personnel and the premises. Implying, any person or premise operating without a license issued by such agencies is seen as a quack in the eyes of the Nigerian law.

Healthcare Financing

In Nigeria, successive governments realized the need to structure the funding of healthcare services as one of the ways to improve healthcare provision (Gilbert et al, 2009). By 1999 the NHIS was established under decree no. 35 by the government and the first phase rolled out in 2005 (NHIS Decree 1999 & NHIS 2012b). The mandate of the scheme is to provide easy access to qualitative, equitable and affordable healthcare via various pre-payment mechanisms (NHIS Decree 1999). Ultimately, universal health coverage should be achieved by 2015 (NHIS Decree 1999). The large and mainly poor informal sector of the population remains largely excluded despite the existence of a roll-out operational guideline to achieve nation-wide enrolment (Lawan *et al*, 2012). There remains a challenge to extend the scheme to those who need it the most in Nigeria.

Healthcare financing alludes to procedures for paying for healthcare expenses. For any economy to grow, it must confer adequate funding to health, keeping in mind the end goal of which is to accomplish anticipated levels of health status and economic improvement. There are different types of health insurance; they can be broadly divided into private and public insurance based on the source of funding. In public the funds are paid by the government from general taxes or hypothecated taxes, this source of funding for healthcare helps to improve access and promote equity. Available funds in public health insurance are often not enough and need to be supplemented by funds from private insurance.

Private health funds are paid directly to the fund managers and consist of non-profit and for-profit plans, and community health insurance schemes. Private coverage, when managed well helps to improve access and equity especially in developing countries, and reduce large out-of-pocket expenses for healthcare. They serve as a useful source of supplementary insurance to provide coverage for health services not covered by the publicly-funded schemes. Poorly planned private health insurance systems have been associated with exacerbating inequalities, the high number of uninsured, and the high cost of out-of-pocket payment. Social health insurance is a compulsory scheme that allows the pooling of funds to finance health services, in addition to other sources such as taxes, private health insurance, community insurance, and others. It usually involves defined contribution from the employees, their employers, and government via a payroll deduction system.

Risk Assessment and Hazard Identification

The risk assessment involves an analysis of the risks generated by various dangers, identified in the process of risk management, that assumes the evaluation of the likelihood of this occurring and how severe are their consequences. This allows attention to be focused upon high risk areas and to identify and evaluate the factors which influence the level of risk. Based on the statistics ITOPF (International Tanker Owners Pollution Federation) the frequency of marine disasters decreased in the mid 80's and now they are very rare. There is a considerable annual variation concerning the incidence of the oil pollution and the volume of oil discharged. This illustrates the random nature of the accidents, which supposes that the reducing of the oil discharges can be

related in great measure with the efforts of the industry for maritime transportation and of governments (through IMO) for improving the safety navigation and preventing the pollution.

The likelihood of the risk appearance can be approached from qualitative and quantitative perspective. Based on the expert experiences and judgments can be performed the qualitative approaches. The quantitative approach is based on national and international databases, accident history reports and statistics, local records. The marine accidents with significant amounts of oil spills are classified in: loss of lives/serious injuries, loss of property and damage to the environment, the massive discharges of oil from shipping accidents that causing serious damages to aquatic ecosystems and coastal are the socio-economic activities such as tourism, fishery, crustaceans farming and other marine. In order to determine the likelihood and consequences, as being the two key elements for the risk assessment, based on the historical data analysis and practical experience, scenarios for different types of accidents are identified. The likelihood and the consequences are evaluated by assessing levels. The likelihood can be evaluated as being very unlikely, remote, occasional, probable, frequent, while the consequences can be considered as being catastrophic, critical, and major and minor. For risk evaluation is necessary to combine the likelihood and consequences of events to be able to quantify the risk.

Health Behavior Theory

The study is anchored on Health Belief Model (HBM) (Hochbaum, 1958; Rosenstock 1966; Becker, 1974; Sharma and Romas, 2012) which is a cognitive model which posits that behaviour is determined by a number of beliefs about threats to an individual's well-being and the effectiveness and outcomes of particular actions or behaviours. Some constructions of the model feature the concept of self-efficacy (Bandura, 1997) alongside these beliefs about actions. These beliefs are further supplemented by additional stimuli referred to as 'cues to action' which trigger actual adoption of behaviour. Perceived threat is at the Forestry, sustainable behaviours and behaviour change: Theories core of the HBM as it is linked to a person's 'readiness' to take action. It consists of two sets of beliefs about an individual's perceived susceptibility or vulnerability to a particular threat and the seriousness of the expected consequences that may result from it.

The perceived benefits associated with a behaviour, that is its likely effectiveness in reducing the threat, are weighed against the perceived costs of and negative consequences that may result from it (perceived barriers), such as the side effects of treatment, to establish the overall extent to which a behaviour is beneficial. The individual's perceived capacity to adopt the behaviour (their self-efficacy) is a further key component of the model. Finally, the HBM identifies two types of 'cue to action'; internal, which in the health context includes symptoms of ill health, and external, which includes media campaigns or the receipt of other information. These cues affect the perception of threat and can trigger or maintain behavior. Of course the opposite to much of this is also true.

Empirical Review

Nwoye, Oyegun and Ugbebor (2019) determined existing safety hazards and practices in the inland water transportation sector in selected states of southern Nigeria. A cross-sectional research design was adopted for the study and the target population for the study included the

operators, commuters and regulators of inland water transportation in the study areas. Data were collected through questionnaires, field observations and oral interviews. A total of 2375 questionnaires were distributed across the six states. The study showed that a wide range of maritime safety hazards and practices bedeviled the inland water transportation sector in Nigeria. The findings of the study showed that the use of incompetent boat operators was the most prevailing maritime hazard in the study area, because it ranked highest, with 72.6% of respondents in agreement, while non-compliance to alcohol and drug policies by operators, no use of journey management forms and safety briefs rarely conducted before departure were the highest ranked unsafe practices with 70.8%, 72.7% and 72% respondents in agreement respectively. The study recommended that relevant authorities, such as Nigerian Maritime Administration and Safety Agency (NIMASA) and Nigerian Inland Waterways Authority (NIWA) should provide competent and trained boat operators, construct standard jetties, ensure standard and routinely maintained boats are used and ensure maritime safety standards and regulations are adhered to by boat operators and maritime workers to prevent incidents and breakdown of boats along waterways in the study area.

Ademiluyi, Afolabi and Fashola (2016) in their study “Analysis of intra-city water transportation in Lagos state” which was necessitated by the regular traffic congestion usually experienced in Lagos state metropolis daily. Primary and secondary data are used with descriptive statistics such as percentages to present analyzed results. Spearman’s correlation was used to analyze the relationships between different factors, like frequency of using the water ways for transportation, educational level and income category of the respondents. The findings from the study showed that more than 58% of the sampled population acknowledged that they use the water transportation daily. While more than half of the respondents (52%) opined that the state of the water transportation system was very bad. The study revealed the following; poor jetty and ferries construction, poor safety and security management, exorbitant transport fares. The researchers recommended that there is an important need for more researches to be conducted in the area to enhance the development of operational techniques and encourage the use of technology to ensure safety of commuters, operators and water transportation infrastructures in the state.

Kaerlevet *al.* (2017) found out that on Danish ships acute and chronic ischemic heart disease rates increased among seafarers employed for longer periods compared to those employed for shorter periods. The authors concluded that working conditions aboard ships were a contributing factor for heart disease. They also pointed out that besides heart diseases male seafarers in comparison to the working population ashore also faced a number of other serious diseases, which mainly included diseases of the respiratory system, diabetes and obesity problems. The female seafarers also suffered from high occurrences of diseases of the circulatory system and diseases of the vein.

Hansen *et al.* (2015) compared the state of health of seafarers and the general working population by investigating data from hospitalizations. The authors found that the proportion of seafarers (both male and female) hospitalized was significantly higher than that of the general workforce. While seafarers’ occupational injury was the main cause, hospitalizations due to lifestyle-related diseases, such as endocrine and nutritional related diseases, including diabetes

(278% of General Workforce (GWf)), diseases of the respiratory system (115% of GWf) and diseases of the digestive system (112% of GWf), were significantly pronounced. The authors also argued that the seafarer's high hospitalization rates were evident despite the healthy worker effect and also despite the possibility that a proportion of the seafarers studied may have been hospitalized in foreign countries and thus did not form part of the data set.

Torner *et al.* (2019) carried out an experiment by simulating various kinds of motion that are generally experienced at sea. They calculated the impacts of the vertical and horizontal motions as well as moments at seven major joint systems of the human body. It showed that the motions of the ships produce significant stress on the lower back of the human body even when a person is merely standing erect. Moreover, the musculoskeletal stress gets further exacerbated when a person either holds or lifts a load under such moving work environment. The authors highlighted that lifting or carrying heavy workloads at sea thus poses significant risk to musculoskeletal system of seafarers.

Pearce *et al.* (2016) highlighted that seafarers suffer heavily from degenerative changes to the knees. The authors, drawing on a sample of 1250 patients who were referred to the Dreadnought Unit, St Thomas' Hospital in London during the period 1989-1990, found that around 24% of the patients were either active or retired seafarers. Their main problems were joint line tenderness and varus angulation (commonly known as bow-leg) at the knee joint.

Parker *et al.* (2017) and Thomas (2013) showed that long working hours, isolated and monotonous lifestyle on ships, and long-term separation from home and family are the greatest source of stress in the lives of seafarers. Hemmingsson *et al.* (1997) pointed out that the working conditions in the seafaring profession contribute to seafarers drinking habits and significantly increase their chances of psychiatric disorders. With regard to mental health problems, a number of researchers have also identified seafarers with a high rate of suicides. Jaremin *et al.* (2016) revealed that Polish seafarers were three times more likely to commit suicide than the shore-based working population in Poland and in general were more likely to suffer from mental and emotional disorders. Roberts and Marlow (2015) in their study of fatalities in British merchant ships argued that about half of the open- verdicts on missing seafarers, i.e. unsolved cases, were likely to be cases of suicides, which, if true, amounted to 14% of all seafaring work-related fatalities. This, the authors highlighted, was much higher than various other working groups, such as the general US workforce where studies show that only 3% die from work-related suicides.

Table 1: Summary of Empirical Literature Reviewed

Author(s)	Design and focus	Methodology	Findings	Gaps	Focus of this study
Nwoye, Oyegun and Ugbebor (2019).	Existing safety hazards and practices in the inland water transportation sector in selected states of southern Nigeria.	A cross-sectional research design was adopted for the study.	The study showed that a wide range of maritime safety hazards and practices bedeviled the inland water transportation sector in Nigeria. The findings of the study showed that the use of incompetent boat operators was the most prevailing maritime hazard in the study area.	The study did not focus on healthcare maintenance and safety of maritime transport workers in Port Harcourt Seaport. Rivers State.	This study focused on the effect healthcare maintenance and safety of maritime transport workers in Port Harcourt Seaport. Rivers State.
Ademiluyi, Afolabi & Fashola (2016)	Analysis of intra-city water transportation in Lagos state.	Spearman's correlation was used to analyze the relationships between different factors, like frequency of using the water ways for transportation.	The findings from the study showed that more than 58% of the sampled population acknowledged that they use the water transportation daily. While more than half of the respondents (52%) opined that the state of the water transportation system was very bad.	Also, the study did not focus on healthcare maintenance and safety of maritime transport workers in Port Harcourt Seaport. Rivers State.	This study focused on the effect healthcare maintenance and safety of maritime transport workers in Port Harcourt Seaport. Rivers State.
Hansen <i>et al.</i> (2015)	Compared the state of health of seafarers and the general working population by investigating data from hospitalizations.	A cross-sectional research design was adopted for the study.	The authors found that the proportion of seafarers (both male and female) hospitalized was significantly higher than that of the general workforce.	The study did not focus on healthcare maintenance and safety of maritime transport workers in Port Harcourt Seaport. Rivers State.	This study focused on the effect healthcare maintenance and safety of maritime transport workers in Port Harcourt Seaport. Rivers State.
Torner <i>et al.</i> (2019)	Carried out an experiment by simulating various	Simple and stratified sampling	It showed that the motions of the ships produce	The study did not focus on healthcare	This study focused on the effect healthcare maintenance and safety of maritime transport

	kinds of motion that is generally experienced at sea.	techniques were employed to select six foods and beverage firms in Nigeria.	significant stress on the lower back of the human body even when a person is merely standing erect.	maintenance and safety of maritime transport workers in Port Harcourt Seaport. Rivers State.	workers in Port Harcourt Seaport. Rivers State.
Frick <i>et al.</i> (2010)	The debate on the practice of OHS management developed three possible hypotheses with regard to the outcome of regulated self-regulation success hypothesis, paper-tiger hypothesis and sham hypothesis..	Correlational Survey.	They argued that in organizations where top managements are committed to safeguarding OHS by focusing on detecting, abating and preventing workplace hazards, and engage worker's authors also showed that historically trade unions played a crucial role in improving labour conditions.	The study did not focus on healthcare maintenance and safety of maritime transport workers in Port Harcourt Seaport. Rivers State.	This study focused on the effect healthcare maintenance and safety of maritime transport workers in Port Harcourt Seaport. Rivers State.

Source: Authors Research Desk, 2022

Methodology

Research Design

The research design adopted in the study was the cross-sectional research design. The cross-sectional research design was used because it allows the investigator to measure the outcome and the exposures in the study participants at the same time. To achieve this, the researcher employed a structured instrument which was administered to regulators, operators and commuters of the inland waterways to assess their perception, knowledge and awareness of the effect of health maintenance and safety of maritime transport workers in Port Harcourt Sea Port.

Target Population

The target population for the study included the operators, commuters and regulators of inland water transportation in Port Harcourt Seaport. Which included 203 senior staff and 112 junior staff therefore; the population of the study is 315 maritime transport workers in Port Harcourt Seaport. The justification for targeting this population was that the researcher felt that these populations were those who frequently used the inland water ways.

Sample Size

The sample size used for this study was determined mathematically using the Taro Yamane's

formula:
$$n = \frac{N}{1 + N(e)^2}$$

Where: n = Sample Size Sought
N = Population (315)
e = allowable error (5%)

The sample size sought (n) is:

$$n = \frac{315}{1 + 315(0.05)^2}$$

$$n = \frac{315}{1 + 0.7875}$$

$$n = \frac{315}{1.7875}$$

n = 176.

The sample size was 176 staff.

Data Collection

Copies of questionnaire were administered to the respondents. The structured questionnaire comprised of open and closed ended questions. The close-ended questions provided more structured responses to facilitate tangible recommendations. The open-ended questions provided additional information that was not captured in the close-ended questions. The researcher administered copies of questionnaire to the departments. The questionnaire was administered using a drop and pick later method. The questionnaire incorporates five Likert scale of Strongly Agree (SA) = 5, Agree (A) = 4, Moderately Agree (MA) = 3, Strongly Disagree (SD) = 2 and Disagree (D) = 1.

Validity of the Instrument

The validity of instrument is the extent to which it measures what it is supposed to measure. In evaluating a psychological test, there is particular concern with construct validity and criterion validity. Construct validity is the degree to which the instrument measures the theoretical variable or construct that it was intended to measure. Criterion validity is how far it correlates with variables with which it would be expected to correlate. These criteria may be assessed at same time as the instrument is administered providing evidence of concurrent validity or on a subsequent occasion (providing evidence of predictive validity).

Reliability of the Instrument

To determine the reliability of the instrument, a test-retest method was adopted. Here the questionnaire was administered to a sample of fifty (50) employees who are not included in the original sample of the study. After a period of two (2) weeks, the same copies of the instrument were re-administered to the same subjects. Their responses at the two intervals were correlated using the Cronbach Alpha. The result of the Cronbach Alpha is expected to give 0.97 which implies that instrument is reliable.

Data Analysis

Prior to processing the responses, the completed questionnaires were edited for completeness and consistency. Quantitative data collected was analyzed by the use of descriptive statistics using SPSS and presented through percentages, means, standard deviations and frequencies. This offered a systematic and qualitative of the study objectives. The information was displayed by use of bar charts, graphs and pie charts and in prose-form. This was done by tallying up responses, computing percentages of variations in response as well as describing and interpreting the data in line with the study objectives and assumptions through use of statistical package for social sciences (SPSS) Version 22.0. Mugenda and Mugenda (1999), explains that SPSS is a comprehensive, integrated collection of computer program for managing, analyzing and displaying data. The qualitative data was coded mathematically and then analyzed statistically. Content analysis was used to data that was qualitative nature or aspect of the data collected from the open ended questions. Finally, the bivariate analysis was conducted, in which all prior hypothetical bivariate relations were assessed and examined using Spearman's Rank Order Correlation Statistics with SPSS (Version 22.0).

Results and Discussion of Findings

Table 2: Analysis of the Copies of Questionnaire Administered

S/No	Questionnaire	Number	% Distribution
1	Questionnaire Retrieved and Used	134	76.1
2	Questionnaire not Retrieved	42	23.9
	Total	176	100

Source: Field survey (2022)

Table 3: Analysis of the Copies of Questionnaire Administered by Status

S/No	Questionnaire	No Retrieved	% Distribution
1	Private worker	71	52.9
2	Government worker	63	47.1
	Total	134	100

Source: Field survey (2022)

Table 3 above reveal questionnaire retrieved according to the statue of staff in Port Harcourt Seaport, the table proved that 71 respondents out of the 134 which represent 52.9 percent while 63 which represent 47.1 are government employees.

Table 4: Analyses of the Copies of Questionnaire According to Time duration in the Seaport

S/No	Time Duration	Questionnaire Retrieved	% Distribution
1	0 – 10 years	27	16.2
2	11 – 20 years	42	25.1
3.	21 – 30 years	46	23.5
4.	31 and above	19	11.3
	Total	134	76.1

Source: Field survey (2022)

Table 4 above reveal questionnaire retrieved according to the time duration of staff in the Port Harcourt Seaport, the table proved that 27 respondents are between the time 0 – 10 years which

represents 16.2%, 42 respondents are between the time 11 – 20 years which represents 25.1%, 46 respondents are between the time 21 – 30 years which represents 23.5% and 19 respondents are between the time 31 and above years which represents 11.3%.

Table 5: Descriptive Statistics for Compliance to National Health Insurance Scheme

Compliance to National Health Insurance Scheme	N	Minimum	Maximum	Mean	Std. Deviation
There is healthcare insurance for maritime transport workers in Port Harcourt Seaport	134	1.00	5.00	4.3810	.74001
The provision of healthcare insurance leverages safety challenges of maritime transport workers in Port Harcourt Seaport	134	1.00	5.00	4.1429	.65465
Healthcare insurance implies ensured access to and use of high-quality healthcare services for maritime transport workers in Port Harcourt Seaport	134	1.00	5.00	4.4286	.59761
National Health Insurance Scheme offers programs to cover the formally employed maritime transport workers in Port Harcourt Seaport	134	1.00	5.00	4.5238	.60159
There is healthcare insurance for maritime transport workers in Port Harcourt Seaport	134	1.00	5.00	4.6667	.65828
Valid N (listwise)	134				

Source: Field survey (2022)

From the table 5, with regards to the minimum and maximum mean scores of the dimension compliance to national health insurance scheme, indicated that most of the respondents were on the response scale of Strongly Agree and Agree as the least mean score value was 4.14 which is greater than 3.5, and the maximum mean score value was 4.67, which was greater than 4.5 mark.

Table 6: Descriptive Statistics for Healthcare Financing

Healthcare Financing	N	Minimum	Maximum	Mean	Std. Deviation
There is need for effective healthcare financing in the Port	134	1.00	5.00	4.3333	.73030
Healthcare financing is the duty of both the private and public sector	134	1.00	5.00	4.4762	.67964
Poor performance of the health sector is because of the funding	134	1.00	5.00	4.6732	.65761
Healthcare financing alludes to procedures for paying for healthcare expenses	134	1.00	5.00	4.3333	.65828
Funds in public health insurance are often not enough	134	1.00	5.00	4.4286	.67612
Valid N (listwise)	134				

Source: Field survey (2022)

From the table 6, with regards to the minimum and maximum scores of the dimension healthcare financing, indicated that most of the respondents were on the response scale of High Extent and

Very High Extent as the least mean score value was 4.33 which is greater than 3.5 but lesser than 4.5, whereas the maximum mean score value was 4.67, which was greater than 4.5 mark.

Table 7: Descriptive Statistics for Safety Policy

Safety Policy	N	Minimum	Maximum	Mean	Std. Deviation
There is need safety policy in the Port	134	1.00	5.00	4.7167	.48305
Safety culture dimensions ranging from management to risk awareness and attitudes	134	1.00	5.00	4.5714	.59761
Maritime transport workers need safety training	134	1.00	5.00	4.5714	.59761
There is need for safety policy that include management systems, safety systems, and maritime transport workers	134	1.00	5.00	4.5132	.58994
Such safety culture surveys take into consideration several	134	1.00	5.00	4.3174	.56732
Valid N (listwise)	134				

Source: Field survey (2022)

From the table 7, with regards to the minimum and maximum mean scores of the dimension Safety policy, indicated that most of the respondents were on the response scale of High Extent and Very High extent as the least mean score value was 4.32 which is greater than 3.5 but lesser than 4.5, and the maximum mean score value was 4.72, which was greater than 4.5 mark. Majority of the responses here fell within the Strongly Agree mark for cultural competence.

Test of Hypotheses (Bivariate Analysis)

Table 8; Relationship between national health insurance scheme and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport.

	National Health Insurance Scheme	Risk Assessment and Hazard Identification
Spearman's rho	1.000	.708**
Correlation Coefficient		
Sig. (2-tailed)	.	.000
N	134	134
Risk Assessment and Hazard Identification	.708**	1.000
Correlation Coefficient		
Sig. (2-tailed)	.000	.
N	134	134

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Research Survey, 2022

Table 8 shows the Spearman's correlation coefficient; rho = 0.708** and the Probability Value (PV) = 0.000 < 0.05 (level of significance). This is to shows that there is a significant positive relationship between national health insurance scheme and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport. We therefore reject the Null Hypothesis which says that there is no significant relationship between national health insurance scheme and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport.

Table 9; Relationship between monitoring/regulating healthcare giver and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport.

			Monitoring/Regulating Healthcare Giver	Risk Assessment and Hazard Identification
Spearman's rho	Monitoring/Regulating Healthcare Giver	Correlation Coefficient	1.000	.876**
		Sig. (2-tailed)	.	.000
		N	134	134
	Risk Assessment and Hazard Identification	Correlation Coefficient	.876**	1.000
		Sig. (2-tailed)	.000	.
		N	134	134

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Research survey, 2022

Table 9 shows the Spearman's correlation coefficient; $\rho = 0.876^{**}$ and the Probability Value (PV) = $0.000 < 0.05$ (level of significance). This is to show that there is a significant positive relationship between monitoring/regulating healthcare giver and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport. We therefore reject the Null Hypothesis which says that there is no significant relationship between monitoring/regulating healthcare giver and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport.

Table 10; Relationship between healthcare financing and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport.

			Healthcare Financing	Risk Assessment/Hazard Identification
Spearman's rho	Healthcare Financing	Correlation Coefficient	1.000	.709**
		Sig. (2-tailed)	.	.000
		N	134	134
	Risk Assessment/Hazard Identification	Correlation Coefficient	.709**	1.000
		Sig. (2-tailed)	.000	.
		N	134	134

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Research Survey, 2022

Table 10 shows the Spearman's correlation coefficient; $\rho = 0.709^{**}$ and the Probability Value (PV) = $0.000 < 0.05$ (level of significance). This is to show that there is a significant positive relationship between healthcare financing and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport. We therefore reject the Null Hypothesis which says that there is no significant relationship between healthcare financing and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport.

Discussion of Findings

Relationship between National Health Insurance Scheme and Risk Assessment and Hazard Identification of Maritime Transport Workers in Port Harcourt Seaport

The first research question examined the relationship between national health insurance scheme and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport. The study found that there is positive and significant relationship between national health insurance scheme and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport. The correlations coefficient of 0.708 and the probability value of 0.000 proved that the relationship between the variables is strong and significant; this implies that increase in compliance to national health insurance scheme increases the ability for the management of Port Harcourt Seaport to assessment and hazard identification of maritime transport workers in Port Harcourt Seaport.

The strong and positive relationship between national health insurance scheme and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport is expected due to policy measures formulated by both government and private investors in the port to ensure safety of the maritime transport workers. The positive and significant relationship between national health insurance scheme and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport is in line with safety culture theory and empirically validates the findings of Nwoye, Oyegun and Ugbebor (2019) that when this technique is deployed against NHIS regulations violation, which it seeks to correct, it may be too late, as injuries, accidents or fatalities may have occurred, the findings of Jaremin et al. (2016) that being insured is not significantly associated with receiving better-quality care, even when controlling for several patient and facility characteristics and the findings of Frick (2007) that overall safety of maritime transport was low but found no significant difference based on health insurance status.

Relationship between Monitoring/Regulating Healthcare Giver and Risk Assessment and Hazard Identification of Maritime Transport Workers in Port Harcourt Seaport

Research questions three was formulated to study the relationship between monitoring/regulating healthcare giver and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport. The study found that there is positive and significant relationship between monitoring/regulating healthcare giver and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport. The study found a correlation coefficient of 0.876 and probability value of 0.000, this implies that increase in monitoring/regulating healthcare giver increases risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport. The positive and significant relationship between the variables confirms the a-priori expectations of the study and the objectives of safety measures in the seaport.

The findings validate the safety culture theory and in line with the theory of planned behavior. The findings confirm the findings of Obikeze and Onwujekwe (2020) that the appalling level of compliance with national health insurance scheme regulations in Nigeria, the findings of

Ogundeji, Ohiri and Agidani (2019) that regulations are products of legal efforts designed to instill law and order in the society, Ogundeji, Ohiri and Agidani (2019) that they should be: properly enforced, unambiguous, updated as required and properly complied with if the purposes for design are to be achieved. Okoro (2017) that determine compliance to national health insurance scheme to include: beliefs; Enforcement and regulating of healthcare givers; Higher profit margin; Inadequate funding, the findings of Etiaba et al (2018) that healthcare system can be described as service providing entities consisting of components or subdivisions oriented towards improvement of the health status of the populace and the findings of Okoro (2017) that one of such programs was the Health Maintenance Organization (HMO) arrangement which was meant to facilitate easy and qualitative healthcare services to Nigerians.

Relationship between Healthcare Financing and Risk Assessment/Hazard Identification of Maritime Transport Workers in Port Harcourt Seaport

Research question five focused on the relationship between healthcare financing and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport. Evidence from the findings in the results presented in table 4.13 found that there is positive and significant relationship between healthcare financing and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport. The study found that the relationship between healthcare financing and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport is 0.709 correlation coefficient and probability value of 0.000. The strong and positive relationship between healthcare financing and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport is expected as the results of the reforms in the marine time industry such as the enactment of relevant laws to guide the operations of the marine time industry such as the national health insurance scheme and increase security presence in the ports. NHIS (2009) that the main objective of NHIS legislation is to prevent accidents and ill health in the workplace, there should be effectiveness and accountability in the enforcement of NHIS rules and regulations, Lateef and Anantharaman (2022), Muchiri et al. (2011), Etiaba et al. (2018) identified two important approaches in ensuring NHIS regulations enforcement, Törner et al. (2019) performed a systematic review of the extant empirical literature on quality regulation and report cards in the United States medical care system.

Conclusion

The study examined the relationship between health maintenance and risk assessment/hazard identification of maritime transport workers in Port Harcourt Seaport. From the analysis from the questionnaire and the test of hypotheses, the study concludes that there is positive and significant relationship between national health insurance scheme and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport, there is positive and significant relationship between monitoring/regulating healthcare giver and risk assessment and hazard identification of maritime transport workers in Port Harcourt Seaport, that there is positive and significant relationship between monitoring/regulating healthcare giver and safety policy of maritime transport workers in Port Harcourt Seaport. The study concludes that there is positive and significant relationship between healthcare financing and risk assessment/hazard identification of maritime transport workers in Port Harcourt

Recommendations

- i. Occupational Health and Safety are important issues for maritime transport workers therefore; government should give prominent attention to collective agreement, conditions of service and implementation of healthcare management system such as the national healthcare insurance scheme
- ii. A healthy and safe environment is among the most valuable assets for workers in both private and government organization, therefore the study recommends that both government and private investors in the Seaport should comply fully with all rules, regulations and provisions of the national health insurance scheme.
- iii. Adequate training is needed among healthcare givers, as most of the workforce especially the maritime workers lack basic education. Pasting information on the notice board containing information on the operating standard and procedures are not enough as many of them cannot read or write. Medical screening should be done periodically to ascertain the state of worker's health.

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