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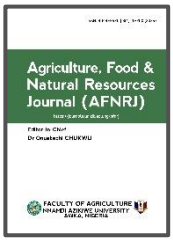

Original Article

Perceived effects of occupational risk factors on fishing activities among fisherfolk in Ilaje, Southwestern Nigeria

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A B S T R A C T

The study examined the perceived effects of occupational risk factors on fishing activities among fisherfolk in Ilaje, Southwestern Nigeria. A quantitative method of data collection was adopted for the study through the aid of a well-structured questionnaire/interview schedule. The descriptive research design of the survey type was used. A two-stage sampling procedure was used to select ninety (90) fishers from the study area. Data were analysed using descriptive (frequency count, percentage, mean, and standard deviation) and inferential statistics (chi-square). Findings from the study revealed that the major occupational risk factors affecting fishing activities in the study area were exposure to hazardous weather conditions (=3.44), deteriorating mental health due to high stress levels associated with the uncertainty of catch and income (=3.27), and risk of accident and injury due to adverse weather conditions =3.26). Similarly, the majority (90%) of the respondents indicated that the lack of financial support and subsidies makes it difficult to maintain their fishing business. Furthermore, the respondents agreed that only experienced fishermen can better navigate and identify risky fishing spots (=4.34), regular boat maintenance prevents delays and ensures continuous fishing (=4.31), and a lack of safety training increases the number of accidents at sea (=4.30). It was concluded that a significant relationship existed between occupational risk factors and fishing activities in the study area (X = 47.575, P<0.05). It was therefore recommended that wearing personal protective equipment (PPE) and ensuring adequate rest can significantly reduce occupational risks among the fisherfolk.

K E Y W O R D S : *Fatigue, Heath, Protective equipment, Safety issues,*

INTRODUCTION

Agriculture is one of the most hazardous occupations worldwide. In several countries the fatal accident rate in agriculture is double the average for all other industries. According to the International Labour Organisation (2007) Out of a total of 335,000 fatal workplace accidents worldwide, there are some 170,000 deaths among agricultural workers. The intensive use of machinery and of pesticides and other agrochemicals has raised the risks faced by the fishingfolk globally (Nafi'u & Ibrahim, 2021). Machinery such as tractors and harvesters has the highest frequency and fatality rates of injury. Available data from developing countries shows that there has been an increase in the accident rate in agriculture. Such accidents occur mainly among migrants and daily workers, as well as women and children whose numbers in waged labour are constantly rising (Mardle & Pascoe, 2018). Moreover, exposure to pesticides and other agrochemicals constitutes a major occupational risk which may result in poisoning and death and, in certain cases, work-related cancer and reproductive impairments. Fishing is one of the world's oldest occupations and probably the most dangerous occupation in the world (Udolisa *et al.*, 2018). To this end, fishing communities worldwide face a myriad of occupational risk,

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ranging from physical injuries and chemical exposures to economic instability and environmental degradation. In recent years, there has been growing recognition of the need to address these risks and promote alternative livelihoods to enhance the resilience of fishing-dependent populations (Ekos & Nautilus, 2018).

There are some common features of fishing occupation, such as: exposure to cold, wind, rough seas, substantial participation of physical effort, frequency of injuries during work, unpredictability and abruptness of threats, equipment failure, everyday psychological stress, and constant economic pressure. At the same time, the specificity and variety of hazards, depending significantly on geographical-climate and cultural factors, makes the dissimilarity (Mardle & Pascoe, 2018). Globally, fishing is referred to as a risky endeavor as the size of the catch often depends on unpredictable factors for the fishers coupled with the risk of drowning, illegal fishing methods and piracy (Handel & Namuyiga, 2024). This is because a safe working environment does not only promote the physical, mental and social well-being of workers, but also saves cost associated with medical bills, compensation, work interruption, loss of experienced personnel, and others resulting from accidents at the workplace. Safety at sea is a serious issue for the commercial fishing industry and artisanal fishing because fishing has always been, and continues to be a dangerous occupation; it ranks highly in all assessments of occupational dangers including risk-taking, injuries, and fatalities (Handel & Namuyiga, 2024). Fish is highly perishable and easily prone to deterioration and quality reduction no sooner it is harvested from its natural environment. Agriculture, is one of the oldest professions, plays a vital role in providing food, fiber, and livelihoods worldwide. However, it is also recognized as one of the most hazardous industries, with numerous occupational risks posing threats to the health and safety of fisher folk. The impact of occupational risk factors, particularly those associated with working far out at sea, on agricultural activities among fisherfolk. This could involve examining the potential effects of exposure to elements such as harsh weather conditions, physical strain from manual labor, chemical exposure, or ergonomic challenges, and how these factors may influence the ability of fisher folk to engage in agricultural activities during their off-seasons or onshore periods (Eggert & Martinsson, 2016). Risk can be defined as the potential occurrence of not expected event of loss or injury; occurrence of risk is measured based on probability and vulnerability given the level of exposure (Cardona & Darío, 2019).

Fisheries worldwide are threatened by overfishing and fisherfolk must deal every day with dwindling marine resources, fishing regulations, market demands and the constant risk of injury (Cinner, 2018). Attitudes in fisheries like target species chosen, allocation of fishing effort, gear type and fishing method, security, and trip characteristics will be defined by the risk perception of fisher folk (Eggert & Martinsson, 2019). Fisherfolk perception towards occupational risk varies according to Weber & Milliman (2020) who refer to risk as being attracted or repelled by risk, while other authors classify the risk attitudes of fisher folk as risk seekers, neutral and averse (McConell & Price, 2019). Eggert & Lokina, (2019) describe artisanal fisherfolk as risk seekers, which could be related to the lack of job opportunities and target species scarcity. Fish handling and processing whose primary concern is the prevention of spoilage are fraught with a number of injuries, health hazards and fatalities. Physical, chemical, ergonomic and biological hazards are the categories of occupational risks to which fish processors are often exposed (Denscombe, 2015). Common physical hazards in the processing premises are slips, trips, falls, and exposure to loud noises; while for chemical hazards, common risks and hazards are acids accidents, solvents, vapours, fumes, and carbon monoxide. Ergonomic hazards are caused by physical factors affecting musculoskeletal system, while parasitic infection, bacteria or viruses, injury from animals such as bites from shark or crocodile are responsible for biological hazards (Olaoye *et al*., 2015). Therefore, this study investigated the effects of occupation risk factors on farming activities among fisherfolk in Ilaje, Southwestern, Nigeria.

Meanwhile, it is a fact that artisanal fisheries in Nigeria provided more than 82% of the domestic fish supply, giving livelihoods to one million fishermen and up to 5.8 million fisherfolk in the secondary sector (Faturoti, 2010). It is however worth of note that in-spite of the many benefits derived from fisheries the industry is faced with numerous health and safety issues. According to the Food and Agricultural Organisation (2024) despite the fact that artisanal fisheries support the livelihood of about 47 million people in developing countries and accounts for more than half of all fishery output in the world, the group continue to be among the most marginalized. Although fishing is the oldest occupation in the Sub-Sahara African countries it is considered to be one of the riskiest occupations in the world. According to Kolawole & Bolobilwe (2019) different injuries have been reported in fishing industries, including, cuts, eye irritability, skin burns, falls, sunburns. Similarly, Ngaruiya *et al*. (2019) submitted that 20% to 50% of workers in the fishing industry especially in the developing nations suffer from occupational risks which culminate into great losses. This risk affects the profitability of fisherfolk as it becomes hazard to fisherfolk. Risk factor affects the rate at which fisher folk are committed to their job. Risk factor such as climatic factor, erosion, oil spillage in sea, government regulation, irregular market price, lack of available market affects fishing activities. They have to stay for long trips at sea on the vessel. They also have to cooperate with their crew even if there is bad relationship between them, thus making the job of a fisherman more difficult (El-Saadawy, 2019). Other factors that could impair safety in this workforce include isolated locations, long working hours, and days with little rest. Furthermore, they are exposed to high demands in their work, which may conflict with a normal family life. These factors may increase the risk of stress-related symptoms among fisherfolk. Therefore, the study examined the effects of occupation risk

factors on fishing activities among fisherfolk in Ilaje Local Government Area, Ondo State, Nigeria

The main objective of the study is to examine the perceived effects of occupational risks factors on fishing activities among fisherfolk in Ilaje Southwestern Nigeria. It was hypothesized that there is no significant relationship between occupational risk factors and fishing activities among fisherfolk in the study area.

Significantly, the study will be of great significance to fisherfolk of Ilaje, Southwestern Nigeria and other researchers. It will assist relevant stakeholders involve in fishing to be aware of the risk that can affect their activities and strategies to employ in overcoming the challenges. Findings of the study will be of benefit to residents of Ilaje Local Government Area in educating them to avoid dumping of refuse in the sea or river as it kills fishes when not control which can affect the profitability of fisherfolk. This study will broaden the knowledge of the Government and policy makers in enacting policies that that can foster sustainable fish production in the country. Findings of this study will also be of help to other researchers who have interest in occupational risk among fisherfolk to add to the existing literature and serve as base line data in increasing knowledge on risk factors associated with fishing activities.

METHODOLOGY

The study was conducted in Ilaje Southwestern Nigeria. Ilaje Local Government Area falls within the coastal area of Ondo State and within the oil prospecting states in Nigeria called the Niger Delta region which is often referred to as the richest part of Nigeria. It lies on Latitude 50 50'N -60 09'N and Longitude 40 45'E - 50 05'E with five (5) major fishing communities; Ayetoro *et al.* (2010) reported that 80% of the population of the study area engages in fishing and that the area always records the bulk of fish produced in Ondo State. Its headquarters is in the town of Igbokoda. Ilaje land has an area of 1,318 km2 (509 sq m) and a population of 290,615 Ilajes were said to have left Ile Ife, their original ancestral home in the 10th century and migrated southwards towards the littoral coastline of southeastern Yoruba land. Today, they occupy the entire Atlantic shoreline of Ondo State, Nigeria with a significant proportion of the Ilaje populace also settled on lands in the interior behind the coast such as Igbokoda. The Ilajes are a distinct migratory coastal linguistic group of Yoruba peoples spread along the coastal belts of Ondo, Ogun, Lagos and Delta states and originally made up of four geo-political entities, namely: Ode Ugbo, Ode Mahin, Ode Etikan and Aheri. While most towns and villages in the Mahin kingdom (Ode Mahin) are distributed on arable lands, the towns and villages in the other three geo-politics of Ugbo, Aheri and Etikan kingdoms are spread out along the beaches and swampy terrains of the Atlantic Ocean coast.

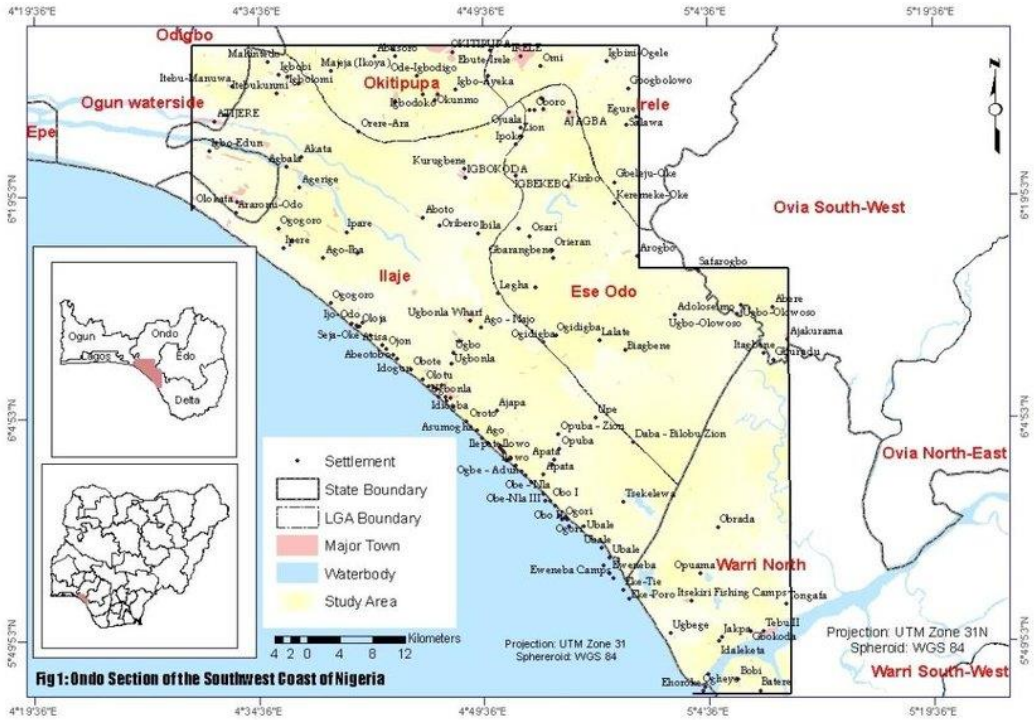

Figure 1: Map of Ondo Section of the Southwest coast of Nigeria

Method of Data Collection

Primary data was used for this study. The data for this study were obtained using a well-structured questionnaire/ interview schedule containing relevant questions on each of the objectives for the purpose of eliciting information from the respondents. Relevant information was also obtained from secondary sources such as articles, journals, books, magazines and internet.

Sampling Procedure and sample size

A two-stage sampling procedure was used to select ninety (90) respondents for the study. At the first stage two (2) communities (Igbokoda & Ugbonla) were purposively selected from Ilaje local government area of Ondo State based on the prevalence of fishing activities in the communities. The second stage involved random selection of 45 fishers from each of the two (2) selected communities, thus giving a sample size of ninety (90) fishers for the study.

Measurement of variables

Independent variables

i. Occupational risk factors affecting fishing activities among fisherfolk in the study area.

This was measured by asking the respondents to rate 12 possible farm occupational risk factors that can affect fishing activities in the study area on a four point Likert scale of Strongly Agreed (SA), Agreed (A) Disagreed (D) and Strongly Disagreed SA, A, D, SD were coded as, 4,3,2,1 for positive statements and 1, 2, 3, 4 for negative statements respectively.

ii. Challenges facing fisherfolk in in the study area

This was measured by providing a list of challenges facing fisherfolk in the study area and the respondents rated on a two-point scale of a challenge and not a challenge. A challenge was coded as 2 while not a challenge was coded as 1.

Ways in which fisherfolk can avoid occupational risk factors in the study area.

Respondents were asked to indicate this as yes or no. Yes =2 No =1

Dependent variable

Perceived effect on fishing activities in the study area

Respondents were asked to rate 10 perception statements on a four-point Likert scale of Strongly Agreed (SA), Agreed (A) Disagreed (D) and Strongly Disagreed. SA A, D, SD were coded as, 4,3,2,1 for positive statements and 1, 2, 3, 4 for negative statements respectively.

Data analysis

The study made used of descriptive statistics (frequency counts, percentage, mean and standard deviation) to analyze the stated objectives and inferential statistics (Chi-square) for the stated hypothesis. The descriptive statistics that were used in this study were frequency count, percentages, mean and standard deviation.

RESULTS AND DISCUSSION

Occupational risk factors affecting fishing activities among fisherfolk in the study area Results on Table 1 shows that the major factors affecting fishing activities among the fisherfolk were exposure to hazardous weather conditions ($\bar{x}$=3.44), deteriorating mental health due to high stress levels associated with the uncertainty of catch and income ($\bar{x}$=3.27), risk of accident and injury due to adverse weather conditions ($\bar{x}$=3.26) and cuts and spine pricks due to the use of malfunctioning or outdated fishing equipment ($\bar{x}$=3.22). This points to the fact that occupational risk factors affect fishing activities among fisher folks in Ilaje local government area of Ondo state. This corroborates the findings of Carlsson, & Walden, (2017) who submitted that risk factors affecting agricultural activities are very common among fisherfolk. Nagaruiya *et al.* (2019) also reported that cuts, spines pricks and musculoskeletal injuries were the major occupational health risks observed among fisherfolk in Kampi Samaki, Lake Baringo, Kenya. The implication is that these factors must be addressed by concerned stakeholders including the community members, policy makers, community development experts and government.

Challenges facing fisherfolk in the study area

Table 2 indicates that the major challenges facing fisherfolk in the study area were lack of financial support and subsidies to maintain their fishing business (90%), pollution and environmental degradation (86.7%), climate change and weather patterns (86.7%) and limited access to modern fishing equipment for fishing operations (82.2%). This shows that fisherfolk faces challenges that affect their fishing business. The findings further buttress that of Eggert, & Martinssonm (2016) that fishfolk encounter different challenges which affects their activities as such if these challenges are not eradicated the growth of fishing activities would be affected in the study area. This suggests that necessary actions must be taken by all concerned parties including governments, local leaders, policy makers, development experts, and the fishers' group to reduce or eradicate these challenges.

Table 1: Occupational risk factors affecting fishing activities among fisherfolk in the study area

Items	Mean	Std. Dev.
i. Fishing activities are significantly affected by exposure to hazardous weather conditions.	3.44	0.69
ii. Adverse weather conditions significantly increase the risk of accidents and injuries for fishermen	3.26	0.57
iii. Cuts and spine pricks due to the use of malfunctioning or outdated fishing equipment poses a significant safety risk during fishing activities	3.22	0.68
iv. The repetitive motions and awkward postures required in fishing tasks lead to long-term health issues	3.11	0.85
v. Exposure to chemicals such as pesticides and fuel used in fishing poses health risks to fishermen.	3.08	1.00
vi. The high stress levels associated with the uncertainty of catch and income impact the mental health of fishermen.	3.27	0.83
vii. Long working hours and irregular sleep patterns contribute to fatigue and increase the risk of accidents among fishermen	1.63	0.77
viii. Fishermen are at high risk of contracting waterborne diseases due to prolonged exposure to contaminated water	1.98	1.03
ix. Inadequate safety training and education increase the likelihood of occupational accidents among fishermen	1.82	0.89
x. The financial instability and lack of economic security in fishing activities lead to additional stress and health issues for fishermen. (ergonomic hazard)	1.66	0.78
xi. Drowning or near-drowning accident	1.82	0.74
xii. Slipping, tripping and falling on wet surface	1.81	0.81

Source: Field survey, 2025. Grand mean ≥ 2.5 = High

Table 2: Challenges facing fisherfolk in Ilaje Southwestern Nigeria

Challenges facing fisher folk	Freq	%
i. Declining fish stocks have made it difficult to sustain my livelihood.	70	77.8
ii. Lack of market information	47	52.2
iii. Market instability and fluctuating fish prices pose a major challenge for me	69	76.7
iv. Limited access to modern fishing equipment hinders my fishing operations	74	82.2
v. Conflicting government regulations and policies make it challenging to carry out fishing activities	63	70.0
vi. Climate change and its effects on weather patterns have negatively affected my fishing	78	86.7
vii. The lack of financial support and subsidies makes it difficult to maintain my fishing business	81	90.0
viii. Pollution and environmental degradation have reduced the quality and quantity of fish available.	78	86.7
ix. In adequate transportation and storage facilities	64	71.1
x. Limited access to markets and buyers for my catch poses a significant challenge.	56	62.2

Source: Field survey, 2025

Risk factors and fishing activities in the study area

Table 3 indicates that the respondents agreed that only experienced fishermen can better navigate and identified risky fishing spots ($\bar{x}$=4.34), regular boat maintenance prevents delays and ensures continuous fishing ($\bar{x}$=4.31) and lack of safety training increases the number of accidents at sea ($\bar{x}$=4.30). The result corroborates the findings of Ali *et al.* (2023) that risk factors such as the absence of rescue vessels, poor fishing facilities, life jackets and first aid kits account for several accidents among fisherfolk in Zanzibar. This implies that there are risk factors affecting fishing activities in the study area which must be tackled to increase productivity.

Ways in which fisherfolk can avoid occupational risk factors in the study area

Table 4 indicates the ways in which fisher folk can avoid occupational risk in the study area. The major ways identified by the respondents include wearing personal protective equipment (PPE) such as life jackets, gloves, boots and waterproof clothing (95.6%), ensuring adequate rest and avoiding fatigue (95.6%), strict adherence to safety protocols and guidelines (90.0%), regular maintenance of fishing equipment(88.9%), utilizing modern technology and equipment(85.6%), regularly monitoring of weather conditions to avoid hazardous situations (81.1%) and collaborating with

other fishermen and sharing knowledge about safety practices can reduce risks (76.6%). Results revealed that according to Ekos & Nautilus (2018) there are various ways through which occupational risk can be controlled, the factors can be self-controlled or industrial control by encountering agricultural extension agents.

Relationship between occupational risk factors and fishing activities in the study area

Results on Table 5 shows that a significant and positive relationship exist between occupational risk factors and fishing activities in the study area (X^2 = 47.575, P<0.05). The null hypothesis was therefore rejected while the alternate hypothesis was accepted. This corroborates the findings of Ngaruiya, *et al*. (2019) who avowed that there is a significant association between occupational hazards and gender roles among fisherfolk in Kampi Samaki, Lake Baringo, Kenya. This implication is that the risk factors affecting fishing activities in the study area must be ameliorated using necessary means including self-help and government interventions.

Table 3: Risk factors and fishing activities in the study area

	Perceived effect of risk factors on fishing activities in the study area	Mean	Std. Dev.
i.	The effect of local weather conditions helps fishermen avoid hazardous weather and optimize fishing times.	1.70	0.82
ii.	Utilizing advanced and efficient fishing equipment affect and increases the catch rates and reduces labor-intensive efforts.	4.27	0.81
iii.	Only experienced fishermen can better navigate and identify risk fishing spots	4.34	0.74
iv.	The lack of safety training increases the number of accidents at sea.	4.30	0.86
v.	Regular boat maintenance prevents operational delays and ensures continuous fishing	4.31	1.04
vi.	The lack of access to financial resources affect investment in better fishing equipment.	4.26	0.86
vii.	Long-term changes in climate patterns affect fish habitats and migration patterns, making fishing more challenging.	2.89	0.73
viii.	Strong community support networks do not contribute to the success of fishing activities.	1.64	0.84
ix.	Inefficient marine traffic and human activities in fishing areas affect fishing operations.	2.53	1.26
x.	Lack of access to prime fishing grounds due to territorial or political restrictions affects fishing activities.	2.70	1.40

Grand mean= 2.5 (Agreed). Source: Field Survey, 2025

Table 4: Ways in which fisher folk can avoid occupational risk factors in the study area

	Ways in which fisher folk can avoid occupational risk factors	Freq	%
i.	Wearing personal protective equipment (PPE) such as life jackets, gloves, boots and waterproof clothing can significantly reduce occupational risks	86	95.6
ii.	Regular maintenance of fishing equipment can help prevent accidents and breakdowns	80	88.9
iii.	Strict adherence to safety protocols and guidelines can minimize occupational hazards.	81	90.0
iv.	Participating in training and skill development programs can enhance safety during fishing	69	76.7
v.	Regularly monitoring weather conditions can help avoid hazardous situations	73	81.1
vi.	Having well-prepared emergency plans can reduce the impact of unexpected incidents	69	76.7
vii.	Utilizing modern technology and equipment can improve safety and efficiency in fishing	77	85.6
viii.	Proper handling and storage of chemicals can prevent health risks.	67	74.4
ix.	Ensuring adequate rest and avoiding fatigue can help in maintaining alertness and safety	86	95.6
x.	Collaborating with other fishermen and sharing knowledge about safety practices can reduce risks.	68	75.6

Source: Field survey, 2025.

Table 5: Results of Chi-square statistics showing relationship between occupational risk factors and fishing activities in the study area

Variables	X^2	Df	p-value
occupational risk factors * fishing activities	47.575	8	0.001

*Source: Field Survey, 2025. (*sig. at p< .05)*

CONCLUSION AND RECOMMENDATIONS

It was concluded that occupational risk factors affect fishing activities among fisherfolk. Fisherfolk face challenges that affect their fishing business. Climate change and its effects on weather patterns have negatively affected fishing activities among fisher folks. Wearing personal protective equipment (PPE) can significantly reduce occupational risks among fisherfolk.

Based on findings in the study the following recommendations were made;

i. there should be consistent use of appropriate personal protective equipment such as life jackets, gloves, boots and waterproof clothing.

ii. ensuring adequate rest and avoiding fatigue to help in maintaining alertness and safety;

iii. strict adherence to safety protocols and guidelines should be ensured by relevant stakeholders including;

iv. regular maintenance of fishing equipment and awareness programs for fishermen, focusing on risk management, first aid and safe fishing practices should be ensured; and

v. fishing communities should be equipped with reliable communication tools and up-to-date weather forecasting information to reduce hazards.

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Authors contributions

OAO carried out all aspects of this research

Ethical statement

The author conducted the research following the principles of consensually, anonymity, willingness and confidentiality.

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