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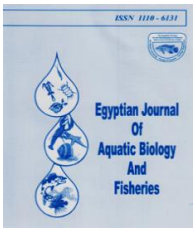

Assessment of Fishing Vessels Accidents

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ABSTRACT

The increased rate of incidents related to maritime safety nowadays has aroused a special focus on fishing vessels' safety. This heightened attention to safety reflects broader efforts to enhance safety across the maritime sector.The assessment of fishing vessel accidents is of a paramount importance in the realm of maritime safety and sustainable fisheries management. Fishing, an essential economic activity and a critical source of livelihood for millions of people worldwide, involves inherent risks that extend beyond simply catching fish. Accidents involving fishing vessels not only pose immediate threats to the lives of fishermen but also have far-reaching implications for the marine environment, fisheries resources, and the economies of coastal communities. This paper discussed some radical findings of studying fishing vessel safety, causes of accidents in terms of human, and material losses. In addition, the marine environmental pollution occurring in response to these accidents was addressed as well. All data from various sources on fishing vessels during 2014-2019 was statistically examined by Microsoft Excel, and the results were displayed in both graphical and tabular formats. The acquired data during the current study showed a great shortage in safety information for the fishing vessels.

INTRODUCTION

Fishermen have been harvesting fish from the sea since the beginning of time. This activity is still done in oceans and lakes all over the world in vessels of all sizes and shapes, using various technologies. Danger has always been an integral component of industry due to the inherent risks inside the aquatic environment, particularly the oceans. The proportion of fishing vessels in global maritime traffic is nearly 40 times larger than that of the commercial vessels.

It further highlights that accidents involving fishing vessels are more frequent compared to accidents involving other types of vessels.The maritime sector has witnessed several major catastrophes that have deeply affected the public and brought significant attention to ship safety. Extensive studies have been conducted at global and national levels to understand and evaluate the number of incidents that could be prevented. Many marine accidents could be averted if greater emphasis had been placed on ensuring safety, particularly in the case of fishing vessels. Recent investigations into vessel loss have raised concerns about future accidents.

The application of strict safety measures has reduced mortality rates in many industries and sectors; however, the situation is different in most fisheries. It needs actions from the stakeholders to address the safety required at sea and the occupational health in the fishing industry. The apparent change in injury rates may be attributed to various factors, such as fishing vessels with old structures, bad weather, and particularly small vessels (7–14m long), due to the significant risk of loss of buoyancy**(Uğurlu *et al.*, 2020)**. Most developed countries have established their formal fishing accident reporting systems, often integrated into marine accident reporting systems, such as the European Maritime Safety Agency (EMSA), Marine Accident Investigation Branch (MAIB) and the National Institute for Occupational Safety and Health (NIOSH); however, this is not exactly the case in most of the developing countries including Egypt.

Maritime activities and related occupations, especially fishing, are highly hazardous with high and increasing fatality rates **(Jaremin & Kotulak, 2004; Jin & Thunberg, 2005; FAO, 2014)**. On average, 24,000 fishermen are losing their lives in accidents each year **(FAO, 2000; Petursdottir *et al*., 2001; Jensen *et al*., 2014)**. The fishing sector`s fatality fluctuated from 24,000 to 32,000 deaths per year over the last two decades **(Willis *et al*., 2023)**. In addition, the rate of fatal accidents in the fishing industry is almost 115 times higher than the overall rate of fatal accidents in the UK, and about 25 times higher than the national rates in Australia and the US **(Håvold, 2010)**. Conditions like long hours, insufficient sleep, and fatigue may lead to major safety concerns for workers in several sectors, especially the maritime sector. Examining fishing vessel accidents indicates that most of those conditions occur during the fishing activities **(Weichelt *et al*., 2022).**

Numerous researchers have investigated the causes of fishing vessel accidents and have indicated that human-related factors are among the main causes **(Rothblum, 2000; Uberti, 2001; Ozguc, 2019; Wang*et al.*, 2020)**.Therefore, developing the employee experience and increasing risk awareness are becoming crucial for accidents reduction **(Lee & Chang, 2005)**. Overloading from overfishing and the use of ineffective fishing equipment are two causes of the loss of stability in the fishing vessels **(Uğurlu*et al.*, 2020)**.

Environmental factors are also playing a significant role in accidents' occurrence **(Uğurlu & Yıldız, 2018)**. These factors include poor weather conditions, vessel's operational status, and the neglected or inadequate fishing vessel structures **(Jaremin & Kotulak, 2004; Roberts, 2004; Wang *et al*., 2005; Laursen *et al*., 2008)**. For instance, there is a strong direct correlation between high wind speed and fishing vessel accidents **(Jin & Thunberg, 2005)**. It is also noted that accidents are more likely to occur in coastal waters during the winter season.

The probability of accidents on fishing vessels increases as vessel length decreases since the severity of the damage sustained is inversely proportional with the fishing vessel length. In the meantime, the severity of the crew's injuries has a direct relationship with the vessel losing stability and sinking **(Wang *et al*., 2005; Jin, 2014)**. Engine failure and/or collision, as well as poor equipment maintenance was determined as the primary accidents' causes **(Cho*et al*., 2017)**. The weak or negligence in keeping watching out for other vessels is another fetal cause of fetal accidents in fishing vessels.

Methods to assess the risk level against a risk matrix using the formal safety assessment technique for accidents involving fishing vessels were explained by **Akyildiz (2015)**. Policies aimed at reducing fishing vessel accidents are mandatory with a strong focus on engine failures and collisions, which are found to occur more frequently at night due to ignoring the safety regulations and irresponsible operations. In this regard, there are several research papers that have been conducted mainly to examine the occupational accidents in fishing vessels **(Roberts, 2004; Chauvin & Le Bouar, 2007; Laursen*et al*., 2008)**.

The development of technology and its creative applications have changed the way accidents of vessels occur **(Suuronen *et al*., 2012; Ugurlu*et al*., 2018)**. Several suggestions were made to implement fishing facilities, enhance the safety system, and manage human factors to effectively reduce accidents involving small vessels **(Jung, 2018)**. The Ministry of Oceans and Fisheries in Korea established a plan to prevent fishing vessel accidents, with a main goal of reducing fatalities and the number of missing persons by 30% by the year 2020. The plan had three main objectives which are summarized in spreading safety culture, expanding safety infrastructure, and strengthening safety regulations **(The Ministry of Oceans & Fisheries, 2018)**. More than 80% of the injuries happened in salmon fisheries. Injuries occurring on vessels employing purse seine gear amounted to 40% of injuries, followed by 30% on gillnet gear vessels, and 12% on set gillnet vessels. 67% of the injuries included a fisherman having a body part caught in or crushed by a winch or wires attached to a winch **(Victoroff *et al*., 2023)**.

The International Maritime Organization (IMO) and other United Nations agencies, e.g., the Food and Agricultural Organization (FAO) and the International Labor Organization (ILO), have been collaborating to create the implementation enhancing plans. They offer advice on education and training as well as thorough curriculum creation. Studies on the impact of mandatory programs have been carried out in Norway, the Netherlands, the United Kingdom, and Spain**(Loughran *et al*., 2002)**.

However, these studies have mainly tended to concentrate on training, accident statistics, and accident causes than on the effectiveness of the technical systems in connection with the mandatory programs. This is despite the current well-acknowledged importance of safety design considering human aspects.

Recognizing the importance of commercial fishing vessel safety, the IMO arranged an international conference that culminated in 1977 with the Torremolinos International Convention for the Safety of Fishing Vessels **(IMO, 1977)**.This convention established consistent guidelines and standards for fishing vessels with 24m (79 feet) and longer, and encompassing their construction, design, and equipment. Another factor is the IMO Convention on the Standards of Training, Certification, and Watchkeeping for Seafarers (STCW). Although fishing vessels were explicitly excluded by STCW 1978, it has inspired initiatives to establish staff certification standards. These initiatives include the Code of Safety for Fishermen and Fishing Vessels **(IMO, 1975a)**, and the Document for Guidance on Fishermen's Training and Certification **(IMO, 1988)**. Additional guidelines and IMO codes encompass the Code of Safety for Fishermen and Vessel Construction and Design **(IMO, 1975b)**, and theVoluntary Guidelines for the Construction, Equipment, and Design of Small Fishing Vessels **(IMO, 1980)**.

Fishing vessel safety assessments may provide excellent potential incentives. Their use could enhance the safety performance of existing vessels, allowing for the measurement of performance changes, and ensuring that future fishing vessels have an appropriate design. This would ensure that any lessons learned are applied to new ships and offer a strategy for predicting and avoiding the most probable incident scenarios. Ship safety was brought up in 1992 in Lord Carver's study into marine safety, which suggested that an emphasis should be placed on a performance-based regulatory approach **(House of Lords, 1992)**. The idea of a formal ship safety evaluation was thus developed by the **Marine Safety Agency (1993)**. A formal safety evaluation is created to be used with common safety concerns for a particular type of vessel.

The fishing industry is one of the most important protein sources, especially in poor countries.Total catch recorded 96.4 million tons in 2018, which represented a 5.4% increase from the previous 3 years **(FAO, 2000; Petursdottir *et al.*, 2001; Jensen *et al.*, 2014)**. The world total number of fishing vessels reached 4.6 million vessels in 2018, which represented a 2.8% decrease from 2016 **(FAO, 2020)**.The Egyptian fishing fleet increased by over 40% from 1997 to 2012, rising from 3046 motorized vessels to 4909 vessels. Of these, about 3046 vessels, representing 62 percent, fish in the Mediterranean, while 1863 vessels, representing 38 percent, fish in the Red Sea.Trawlers are 26% of the fishing gear **(Samy, 2015)**.

Commercial fishing is a hazardous profession that showed significant differences in occupational risk exposure within the industry. Fishing is regarded as one of the world's riskiest professions. Complete stability is one of the most important parts of boat

safety, and its importance is amplified in small ships such as fishing boats. Several studies have highlighted the dangers concerning fishermen and their vessels **(Roberts, 2004)**.

Although being among the most important produced, they continue to pose a risk to three categories of individuals: fishermen, ships, and the environment. The most important mission is to evaluate the boats' stability. These vessels, unlike typical boats that are carried into the harbor, are loaded into the sea while operating off the shore, often under adverse weather conditions.

MATERIALS AND METHODS

Although recording accidents in fishing vessels is important, an emerging difficulty in collecting comprehensive statistical data was faced.

The statistics in this paper were collected through the annual statistics of the Food and Agriculture Organization(FAO), and the European Maritime Safety Agency (EMSA) annual overview of marine casualties and incidents in 2020, Jap Transport Safety Board Organization (JTSB), National Institute for Occupational Safety and Health (NIOSH), Marine Accident Investigation Branch (MAIB), and various sources and other research. The results of this research monitored the ship accidents that occurred for 6 years from 2014 to 2019, and investigated the main causes with a concrete comparison between accidents of fishing vessels and other ship types. A total of 3455 cases of vessels are being considered in this study. The collected accident data were analyzed by Microsoft Excel, and the results were displayed in both graphical and tabular formats. The representation of the results were kept as clear and straightforward as possible.

RESULTS AND DISCUSSION

1. Analysis of accidents for all types of vessels

Statistical analysis was conducted on accident data from all types of ships that were collected from different sources, such as EMSA, JTSB, NIOSH, FAO and MAIB during 2014–2019. A comparison was made between the major causes of accidents and their effects. It was observed that the loss of control and collision were the most dangerous factors leading to more severe injuries and fatalities. The term “I: Injury” refers to being physically affected by the hazards of an accident without death, while “F: Fatality” refers to the death of a person and the loss of life. There are accidents that can result in fatalities and injuries. However, other accidents do not result in any fatalities or injuries. Instead, these accidents may cause other types of losses, such as material losses, loss of fish crops, or pollution of the marine environment. These types of incidents are referred to as “C: Casualty”. “T: Total” refers to the sum of injuries, fatalities, and casualties that happened, as shown in Table (1).

Table 1. The major causes of accidents and their effects during the period of study. (a): (2014– 2016) and (b): (2017– 2019), according to **EMSA (2020)**

(a)	**2014**				**2015**				**2016**			
Accident type	**C**	**F**	**I**	**T**	**C**	**F**	**I**	**T**	**C**	**F**	**I**	**T**
Capsizing/Listing	11	9	7	27	15	11	1	27	8	6	1	15
Collision	332	24	33	389	293	2	27	322	317	37	15	369
Contact	390	0	74	464	402	0	24	426	357	0	16	373
Damage/Loss of equipment	287	6	27	320	361	2	16	379	356	1	38	395
Fire/Explosion	160	13	74	247	173	8	6	187	131	0	17	148
Flooding/Foundering	60	12	1	73	56	49	4	109	44	0	0	44
Grounding/Stranding	325	8	9	342	329	3	8	340	290	0	5	295
Hull failure	6	0	0	6	15	0	0	15	22	0	2	24
Loss of control	589	0	21	610	572	0	15	587	680	0	7	687
Missing	0	0	0	0	0	0	0	0	1	0	0	1
Total	2160	72	246	2478	2216	75	101	2392	2206	44	101	2351

(b)	**2017**				**2018**				**2019**			
Accidenttype	**C**	**F**	**I**	**T**	**C**	**F**	**I**	**T**	**C**	**F**	**I**	**T**
Capsizing/Listing	15	5	8	28	18	2	11	31	17	1	10	28
Collision	292	8	47	347	279	0	16	295	256	7	41	304
Contact	420	0	85	505	379	0	31	410	320	0	28	348
Damage/Loss of equipment	310	1	17	328	341	3	23	367	297	1	20	318
Fire/Explosion	133	2	14	149	133	6	20	159	124	6	6	136
Flooding/Foundering	62	1	3	66	35	2	20	57	46	1	4	51
Grounding/Stranding	292	0	4	296	301	1	5	307	228	2	0	230
Hull failure	5	0	0	5	5	0	0	5	4	0	0	4
Loss of control	751	2	6	759	759	1	1	761	796	11	35	842
Missing	1	0	0	1	1	0	0	1	2	3	1	6
Total	2281	19	184	2484	2251	15	127	2393	2090	32	145	2267

*C:Casualty, F: Fatalities, I: Injuries and T: Total.

It was found that the most frequent accidents were the loss of control, contact, loss of equipment, collision, and grounding records of 31, 17, 15, 13, and 13%, respectively. The most dangerous of them is the loss of control. It recorded 589 to 796 accidents during the past 6 years.

Based on the information provided, there's a comparison of the major causes of accidents and the resulting damage between cargo and fishing vessels during the study period. Cargo vessels were the most frequent type of accidents in 2014, with deaths accounting for 2.6% and injuries of 17.2%. In contrast, fishing vessels had a lower frequency but were considered the most dangerous, with deaths representing 7.8% and injuries accounting for 52% of the total number of accidents in the same year. Studies reveal issues in fishing vessels causing higher injuries and deaths compared to other types, emphasizing the need for further investigation and solutions to enhance safety in the fishing sector.

Fishing ships are generally smaller in length and width compared to cargo ships or passenger ships. As a result, incollisionswith equal force involving these ship types, cargo or passenger ships tend to sustain damage, while fishing ships are more susceptible to loss due to their smaller size. Between 2014 and 2019, the loss rate of fishing vessels was recorded at approximately 56% compared to other types of vessels

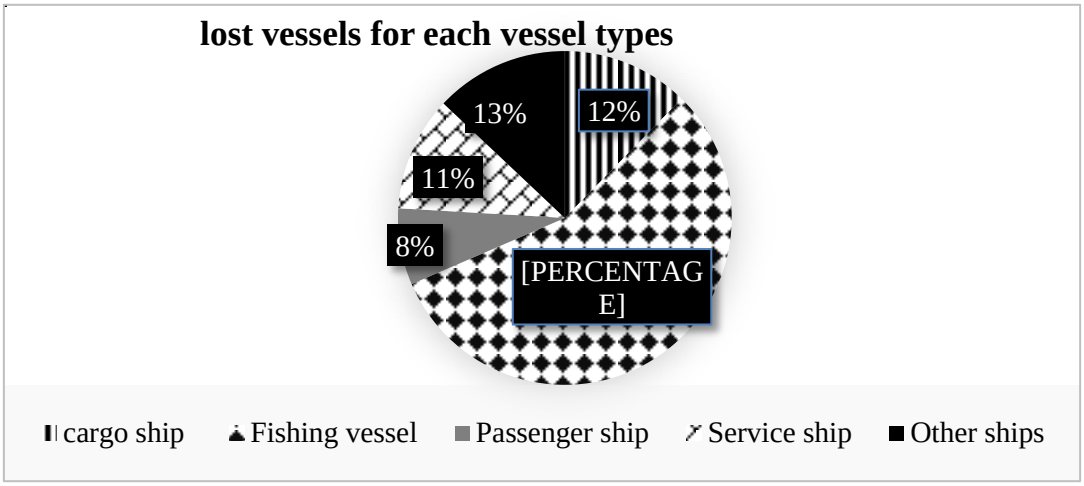

Fig. 1. Percentage of lost vessels for each vessel type during the period from 2014- 2019, according to **EMSA (2020)**

2. Analysis of fishing vessel accidents

Analysis of fishing vessel accidents provides helpful knowledge of the safety problems at various types of fishing vessels. This knowledge is used to build safety measures and interventions.

Table (2) presents an overview of accidents across various types of fishing vessels. Trawlers appear as the most frequently involved vessel type in accidents across all types, especially the loss of propulsion power, which is the major reason for accidents. Trawlers affected by the causes of accident recorded a percentage of 56%, followed by seiner, liner, gillnetter, multipurpose, dredger, and potter, which recorded 9, 7, 7, 5, 3, and 2%, respectively.

The main cause of these accidents is the loss of propulsion, with trawlers considered the most dangerous. This result highlights the great need to address issues related to the propulsion system and ensure its maintainability to effectively prevent accidents in trawlers. Furthermore, other fishing vessel types, including seiners, liners, gillnetters, multipurpose vessels, dredgers, and potters, also experience accidents, albeit at lower frequencies. Table (2) shows that a trawler is the most common type of fishing vessel that is exposed to all types of accidents.

Table 2. Type of accidents per type of fishing vessels during the period of study (2014-2019) according to **EMSA (2020)**

	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**T**
Dredger	34	10	6	5	7	4	6	25	2	99
Gillnetter	29	5	7	10	11	10	7	49	6	134
Liner	15	1	4	3	8	11	8	47	4	101
Multipurpose	21	1	1	4	6	11	1	38	5	88
Potter	18	0	1	0	4	6	4	17	0	50
Seiner	13	8	7	9	18	9	4	63	3	134
Trawler	260	33	43	60	76	110	51	404	66	1103
Other/ Unspecified FV	107	10	16	17	23	66	12	75	18	344
Total	497	68	85	108	153	227	93	718	104	2053

* A: Collision, B: Contact, C: Damage/ loss of equipment, D: Fire /Explosion, E: Flooding/ Foundering, F: Grounding/stranding, G: Loss of directional control, H: Loss of propulsion power, I: Other /Unspecified and T: Total.

Table (3) shows the analysis of fishing vessel accidents during the period from 2014 to 2019. It reveals a concerning trend of increasing accident frequency despite a decrease in the overall number of fishing vessels. During the same time, concerns were raised about the future sustainability of the fishing industry. The fishing sector faces significant risks due to a lack of interest and failure to address underlying causes, potentially leading to severe socio-economic consequences for fishermen and workers.

Table 3. Number of fishing vessels and accidents (2014-2019) according to **EMSA (2020)**

	2014	**2015**	**2016**	**2017**	**2018**	**2019**
No. fishing vessel	954434	925155	884628	868726	785195	667416
No. causalities	572	461	580	625	600	617
Percentage	0.06%	0.05%	0.07%	0.07%	0.08%	0.09%

To achieve the maximum benefit from such measures, it is necessary to first evaluate the risk of unwanted maritime accidents by considering factors such as frequencies and consequences, including fatalities, monetary losses, environmental damage, etc. The term “risk” is the combination of the frequency (or probability) and the severity of the consequence **(IMO, 2002)**, where consequence implies events having negative effects on people, the economy, property, the environment, etc. Moreover, frequency is the number of occurrences of an event occurring during a given unit of time. Trawlers are widely utilized in the fishing industry due to the economic value associated with their catch. However, in terms of accident frequency, trawlers are the most involved type of fishing vessel. Nearly half of the reported incidents involved trawlers, surpassing other types of fishing vessels. This high frequency can be attributed to the nature of trawler operations, which involve multiple operations such as hauling and shooting, as well as the presence of heavy equipments like winches. Over the period from 2014 to 2019, a total of 1897 accidents, accounting for 46% of all accidents, were recorded for trawlers compared to other types of fishing vessels (Fig. 2).

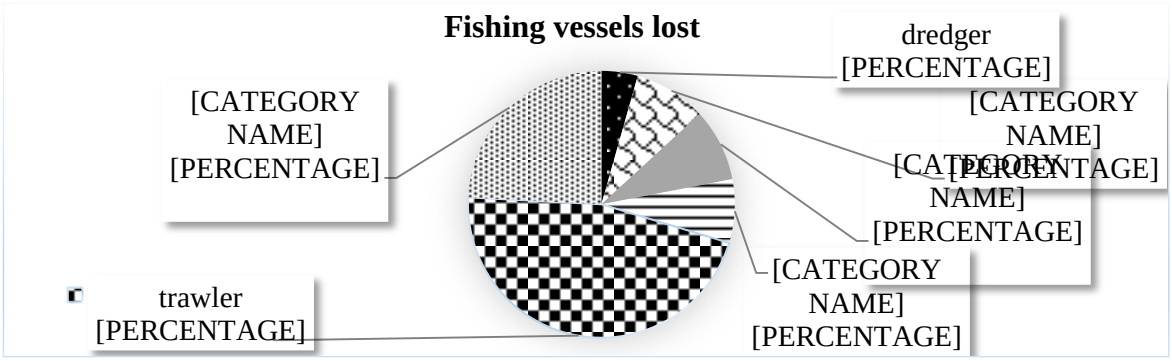

Fig. 2. Fishing vessels that were lost according to **EMSA (2020)**

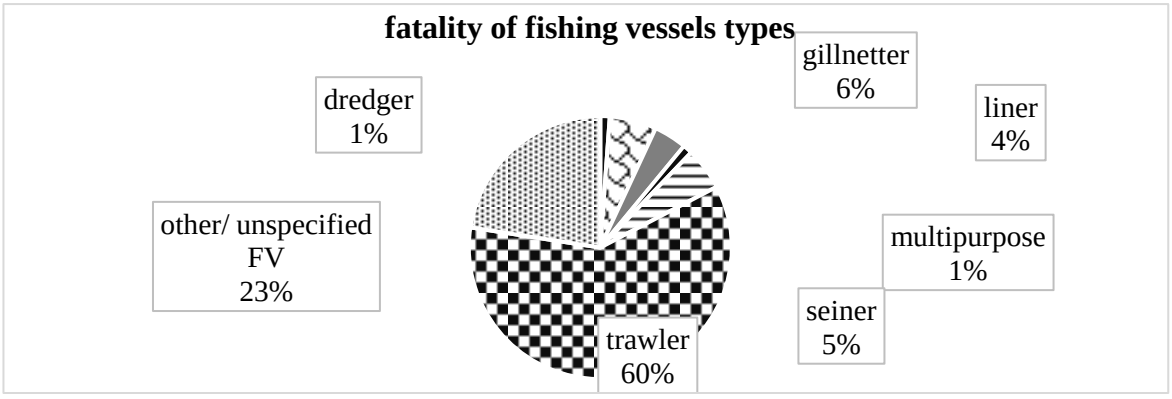

Fig. 3. Percentage of fatality of fishing vessel types, according to **EMSA (2020)**

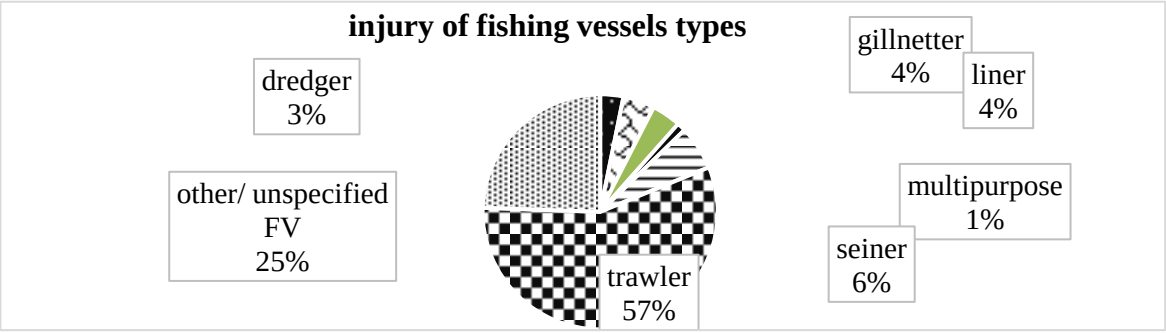

Fig. 4. Percentage of injury of fishing vessel types according to **EMSA (2020)**

Based on the analysis of consequences on individuals during the period from 2014 to 2019, trawlers exhibited the highest rates of fatalities and injuries among different types of fishing vessels. The fatalityrate for trawlers stood at 60%, while the injury rate was recorded at 57%. This indicates that more than half of the crew members who lost their lives or sustained injuries were involved in trawler accidents compared to other types of fishing vessels. These findings are visually represented in Figs. (3, 4). The data focuses attention on the high risks associated with trawler operations. By focusing on preventative strategies and safety enhancements, especially for trawlers, the fishing industry can effectively mitigate the occurrence of accidents and protect the lives and well-being of crew members.

The frequency and consequence analysis methods were used to study the results of the analysis of fishing vessel accidents. The results are presented in Table (4), which provides an overview of the most prevalent types of accidents within the fishing vessel industry. Data in Table (4) shows that, the accident that occurs most frequently is the loss of propulsion power, accounting for 35% of all recorded incidents, followed by collision accidents which recorded 24%, and grounding accidents, making up for 11% of the incidents from the total number of accidents. These statistics highlight the significance of addressing issues related to the loss of propulsion power, collisions, and grounding incidents in efforts to improve safety and prevent accidents in the fishing vessel sector.

Table 4. Frequency of fishing vessel accidents (2014-2019) according to **EMSA (2020)**

Frequency of fishing vessel accidents (2014-2019)		
Accident type	**No.**	**%**
Collision	497	24%
Contact	68	3%
Damage/Loss of equipment	85	4%
Fire / Explosion	108	5%
Flooding/Foundering	153	7%
Grounding/ Stranding	227	11%
Loss of directional control	93	5%
Loss of propulsion power	718	35%
Other / Unspecified	104	5%

For the outcomes of the analysis method about fishing vessel accidents, it was revealed that the riskiest type of accident is capsizing. This conclusion is based on the significant impact it has in terms of fatalities, injuries, and casualties. The data in Table (5) show that capsizing incidents account for 22, 24, and 54%, respectively, of a total of 156 accidents of capsizing. The following flooding accident recorded 16, 8, and 76% fatalities, injuries, and casualties, respectively, from a total of 400 accidents of flooding.

Capsizing and flooding accidents are a significant concern, necessitating urgent measures like improved vessel stability, crew training, and robust emergency response protocols to minimize risks and protect lives.

Table 5. Major consequence of fishing vessel accidents (2014-2019) according to **EMSA (2020)**

Consequence for fishing vessel accidents (2014-2019)			
Accident type	**Casualty**	**Fatality**	**Injury**
Capsizing/Listing	54%	22%	24%
Collision	87%	4%	9%
Contact	90%	0%	10%
Damage/Loss of equipment	93%	1%	7%
Fire/Explosion	83%	3%	13%
Flooding/Foundering	76%	16%	8%
Grounding/Stranding	98%	1%	2%
Hull failure	97%	0%	3%
Loss of control	98%	0%	2%

3. Analyses of accident causes

The results show that the major causes of accidents are human action, bad weather, and the loss of total or partial control of machinery or handling equipment.

Human action

The captain's negligence and indifference can lead to accidents, viz. fires, sinks, and collisions, resulting from improper handling of electrical appliances, cooking, radioactive materials, and weight distribution.

The analysis of accidents attributed to human action reveals several factors contributing to their occurrence. These factors include:

1. The ship's crew and captain's lack of knowledge, training, and experience can lead to errors, poor decision-making, and increased accident likelihood.

2. Inadequate compliance with procedures, including before sailing, during the fishing process, and in emergencies, can lead to hazardous conditions and increased accident risks.

3. Insufficient navigation knowledge can lead to ship deviation, risking safety and marine life. Addressing this issue through awareness, training, and strict adherence to safety procedures can mitigate accidents in the fishing sector.

According to the report of **EMSA**'s **(2020)**, out of a total of 3,455 accident events analyzed in fishing vessels between 2014 and 2019, 55.6% of the accidents were attributed to the category of 'human action,' while 26.8% were ascribed to 'system/equipment failure' (Fig. 5).

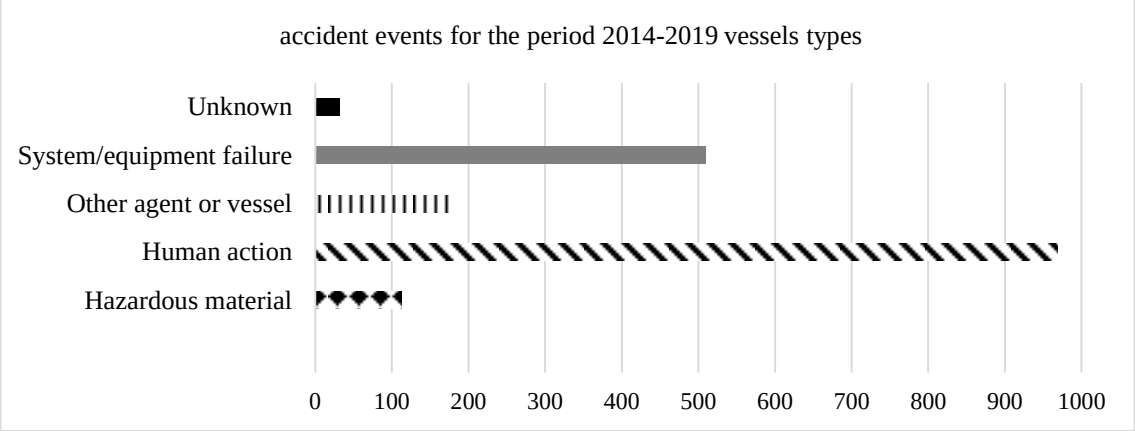

Fig. 5. Accident events for the period 2014-2019; the number of accident events involving fishing vessels according to **EMSA (2020)**

Bad weather

There are reasons for accidents that cannot be controlled, overcome, or managed. One of them is the weather. It is difficult to control the strong winds, heavy rains, mist, and huge waves. All these risks may lead to the ship capsizing and being destroyed. There are many histories of ship accidents in which the weather was the cause. Weather-related accidents, such as Nor'wester storms, can cause significant damageto the property, loss of life, and harm to the environment. These storms, which appear suddenly during the pre-monsoon season, can cause damage to houses, power lines, and communication disruptions. These storms have led to numerous ship accidents, indicating a concerning trend that is not decreasing.

The loss of total or partial control of machinery or handling equipment

It is considered one of the most common causes of accidents. The main cause is the failing ship's devices such as navigational equipment, engines, marine safety devices, and firefighting. This fault contributes directly or indirectly to accidents, such as contact, capsize, and collision.

The effect of fishing vessel accidents on the marine environment

Fishing vessel accidents are the most dangerous and destructive, causing human and material losses, as well asmarine environmental pollution. It causes destruction to the marine environment, resulting in the death of marine organisms and changes to the ecosystem.This effect may appear quickly or in the long term. For example, in 2015 Hawaii Five-1 capsized in the Gulf of Mexico, releasing 14,000 gallons of diesel fuel and unknown lube oil, leading to the death of marine organisms and air pollution **(MAIB, 2016).**

CONCLUSION

This paper analyzed fishing vessel accidents between 2014 and 2019 by using Microsoft Excel and safety assessment methods. It aimed to assess risks and develop strategies to improve safety in the fishing industry. Factors such as human action, bad weather, and equipment loss are common causes of ship accidents. Trawlers are the most frequent type, with 1897 accidents out of 3455 recorded during this period. Loss of control is the most frequent cause of accidents, causing more serious injuries due to contact, fire, and collision. Current prescriptive rules don't adequately address the safety of whole fishing vessels. A "code of practice" would enable individual vessels to achieve safety results through various methods.

The information needed for a quantitative evaluation is either not accessible or not in the best possible format. This can be explained by the fishing company's organizational structure or by the need to record mishaps and events. Restructuring the fishing industry's overall risk data recording system to enable quantitative risk analysis may be the most worthwhile idea. The suggested formal safety analysis for fishing vessels may then give way to the FSA that the IMO and MCA have proposed for risk assessment.

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