

### Health and work of cassinu community fishermen, in rio de janeiro, brazil: social (in) visibility and struggle for recognition

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## RESEARCH

Saúde e trabalho de pescadores artesanais da comunidade cassinú-rj, brasil:

(in) visibilidade social e luta pelo reconhecimento

Health and work of cassinu community fishermen, in rio de janeiro, brazil: social (in) visibility and struggle for recognition

Salud y trabajo de los pescadores de la comunidad de embarcaciones cassinú-rj, brasil: (in) visibilidad y lucha social para el reconocimiento

Crystiane Ribas Batista Ribeiro <sup>1</sup>, Vera Maria Sabóia <sup>2</sup>, Dayane Knupp de Souza <sup>3</sup>

### ABSTRACT

**Objective:** to discuss the health and work of artisanal fishermen from the fishing village of Gradim Z-08, in Cassinu community. **Method:** field research, of quantitative and qualitative nature, carried out from January to May 2013 with artisanal fishermen from a village located in Cassinu community-RJ. **Results:** 35 fishermen were interviewed, prevalently aged between 40 and 55 years old; 34.3 % had completed primary school, 42.9 % received monthly income between 1 and 2 minimum wages, 71.4 % used PPE partially and 91.4% had suffered some injury in the profession. It was identified, through testimonials and local observations, that they faced precarious working conditions and risks associated with environmental pollution. **Conclusion:** this study showed that there are risks of injury and contamination by microorganisms in water arising from partial use of PPE, poor housing conditions and ineffective sanitation. These conditions are aggravated by lack of labor protection, informality of artisanal labor, low education and low income from the activity. Nurses and other health professionals should worry about the "invisible" populations, developing actions and investigations that generate reflections on strategies that promote improvements in education and health. **Descriptors:** Working conditions, Environmental pollution, Nursing.

### RESUMO

**Objetivo:** discutir as condições de saúde e trabalho de pescadores artesanais da colônia de pescadores do Gradim Z-08, na comunidade Cassinú. **Método:** pesquisa de campo, de caráter quanti-qualitativo, realizada no período de janeiro a maio de 2013, com pescadores artesanais de uma colônia situada na comunidade Cassinú-RJ. **Resultados:** foram entrevistados 35 pescadores com faixa etária prevalente entre 40 e 55 anos, sendo que 34,3% estudaram até o Ensino Fundamental 1, 42,9% recebem renda mensal entre 1 e 2 salários mínimos, 71,4% utilizam EPIs de forma parcial e 91,4% sofreram algum ferimento na profissão. Identificaram-se, pelos depoimentos e observações locais, precárias condições de trabalho e riscos associados à poluição ambiental. **Conclusão:** o estudo demonstrou que há riscos de ferimentos e contaminação por microrganismos na água pela utilização parcial de EPIs, más condições habitacionais e saneamento ineficaz. Essas condições são agravadas por falta de proteção trabalhista, pela informalidade do trabalho artesanal, baixa escolaridade e baixa renda obtida com a atividade. Além disso, alertou para que enfermeiros e outros profissionais da saúde se preocupem com as populações "invisíveis", desenvolvendo ações e investigações que gerem reflexões sobre estratégias que favoreçam melhorias na educação e saúde. **Descritores:** Condições de trabalho, Poluição ambiental, Enfermagem.

### RESUMEN

**Objetivo:** discutir las condiciones de trabajo de los pescadores artesanales de la colonia de pescadores de Gradim Z-08, en la comunidad Cassinú. **Método:** estudio de campo de carácter cuantitativo y cualitativo realizado en el periodo de enero a mayo de 2013, cuyo escenario fue la colonia de pescadores de la comunidad ubicada en Cassinú, RJ. **Resultados:** 35 pescadores fueron entrevistados frecuentes con la edad entre los 40 a 55 años, 34,3% tenía nivel de estudios primarios 1, el 42,9% recibe ingresos mensuales entre 1 y 2 salarios mínimos, el 71,4% utiliza el PPE parcialmente, 91,4% sufrió alguna lesión en la profesión. Fue identificado por testimonios y observaciones locales, precarias condiciones de trabajo y los riesgos asociados a la contaminación del medio ambiente. **Conclusión:** el estudio pone de relieve el riesgo de lesiones y la contaminación por microorganismos en el agua por el uso parcial de PPE, malas condiciones de vivienda, saneamiento ineficaces. Estas condiciones se agravan con la falta de protección laboral, la informalidade de la artesanía, el bajo nivel educativo y bajos ingresos de la actividad. **Descritores:** Condiciones de trabajo, La contaminación ambiental, Enfermería.

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## INTRODUCTION

**G**radim, one of the neighborhoods of Sao Goncalo-RJ, concentrates a large number of artisanal fishermen in the Z-08 Fishermen's Village that develops fishing activities in the Guanabara Bay. That district recorded strong population growth in recent years and, similarly to what occurs in so many others in Brazil, it followed the disordered occupation model that harms natural resources, often scarce or non-existent.

Artisanal fisherman is a professional who is properly licensed by the Ministry of Fisheries and Aquaculture, and carries on commercial fishing, autonomously or in a household system, with their own means of production or through contract partnerships, landings or with small vessels.<sup>1</sup>

In the history of the Guanabara Bay, the artisanal fisherman arises as a category of refugees, which was composed of recently freed slaves or escaped and became shellfish, fishermen and lumberjacks in mangroves of the region, becoming invisible and disregarded.<sup>2</sup>

Their present situation seems to have not undergone major changes. For the artisanal fishermen, it is admitted informality in relation to work, which is a social phenomenon that is found in almost the entire capitalist world. However, it assumes greater dimensions in the so-called peripheral capitalist countries, such as Brazil.

Informal condition is one in which the employee performs a job that is not exchanged for money and does not contribute directly to increase money, or does not have a regulated employment relationship.<sup>3</sup> It comprises both activities and forms of production that are not typically capitalist - legal or illegal - and working relationships not registered, even though typically capitalists. People who have been included in this context are generally less educated, with low professional qualification, black, young people and women.<sup>4</sup>

The precariousness of labor legislation specific to the fishing industry encourages collusion between the fisherman and the owner to disrespect the law, aggravating the lack of assistance and social protection to the fishermen. Fishermen, thus, need to use their creativity to overcome the lack of resources. Many learn to make their own fishing nets and repairs on their boats.<sup>5</sup>

Another important factor to be highlighted is that fishery, once practiced by a limited number of traditional fishermen in an aquatic environment with great diversity of fish available, is hindered by the current environmental pollution.

The Guanabara Bay comprises the second largest industrial complex and the second largest population center of the country<sup>6</sup> and is considered one of the most polluted environments of the Brazilian coast.<sup>7</sup> In addition to receiving industrial incentives, the bay receives a significant amount of pollution of organic and inorganic materials from households

of the metropolitan area of Rio de Janeiro and surrounding municipalities. A recent study in the southwestern portion of the Guanabara Bay confirms the recent accumulation of sewage and phytoplankton organic material as a result of eutrophication of the system and cites human action as inductor of the change in the natural balance of the system as a whole.<sup>8</sup>

It is understood that the ecological impact as a result of water pollution can produce the imbalance of an entire ecosystem and contribute to the spread of various microorganisms, affecting working and health conditions of many fishermen whose main source of income is fishing.

Thus, this article aims to discuss the working conditions of artisanal fishermen from the fishing village of Gradim Z-08, in Cassinu community.

## METHOD

It is a quantitative and qualitative field research with a random sample of 35 fishermen who live in the fishing village of Gradim Z-08, in Cassinu community (Figure 1), São Gonçalo-RJ, conducted between January and May 2013.

We used a semi-structured interview as data collection technique, choosing the form as a tool, in addition to information received by leaders of fishing associations and residents, and observations of the site and of the work process.

Before the interviews, a pilot-test was conducted through the application of the form with a fisherman residing in the vicinity of Maribondo river, near the village, with a view to the applicability of it. Authors opted for the application of this instrument, as it was found, by previous studies, low education of the study group, which probably would hamper the application of a self-administered questionnaire. It was realized the need to reduce the items because the tool was excessively long, lasting more than 40 minutes, which led to apparent disinterest by the fisherman during the interview.

**Figure 1.** Fishing Village of Cassinu Community (Gradim, Sao Goncalo - RJ)



Initially, we found some difficulty, because we realize that fishermen were sleeping at the time we arrived the place, as they work at night and dawn. The president of the association got acquainted with the instrument to be applied and mediated this process, suggesting that we scheduled a specific date for the start of data collection inside the

association itself. So, we prepared posters to publicize this meeting, and he committed to fix them in strategic places of the community, besides divulging by word of mouth meele. Thus, the interviews took place in the housing association. However, due to the low quantity of participants on the first day of collection, following the suggestions of fishermen, the interviews began to occur in the very fish unloading site, at the time of the auction, at about six a.m.

Fishermen, after the invitation and agreement to participate in the study, signed a Free Informed Consent, and were informed about the research objective, conditions of participation and the anonymity of participants. The fishermen were identified with the letter "F", for fisherman, followed by the sequential number of the interview in order to preserve the anonymity of statements made by them. Obtained as follows: F1, F2, F3, F4, F5, ... F35.

The data were systematized in SPSS, version 20, using simple statistical analysis. The semistructured interview allowed greater participation of these workers to report their experiences and problems that occur in everyday life, enabling a most effective understanding of their working conditions and peculiarities of the fishing activity carried out by them in Guanabara Bay. Thus, the data analysis was based on legal and intimate aspects of social relations, cultural aspects and feelings verbalized during interviews.

## RESULTS AND DISCUSSION

Interviews were conducted with 35 fishermen aged between 24 and 68 years old, and the prevalent age group was between 40 and 55 years old. The small number of younger fishermen can be attributed to higher possibility of being engaged in other work activities.

It was also noted a prevalence of males in the fishing activity in the region, probably due to the physical effort required to capture and remove fish from boats. However, there are studies on women working in the fishing industry in other regions of Brazil. In one of these studies, it was found the participation of women in the separation of crabs and shrimps from the school, and also in peeling prawns and crabs, not participating, however, in the act of fishing, marketing and forums that discuss fishing. The research draws attention to the feeling of devaluation and invisibility of labor activity in the fisheries, by these women, as well as impotence in the face of environmental degradation and consequent reduction of the raw material.<sup>9</sup> These aspects were also evident on the present research.

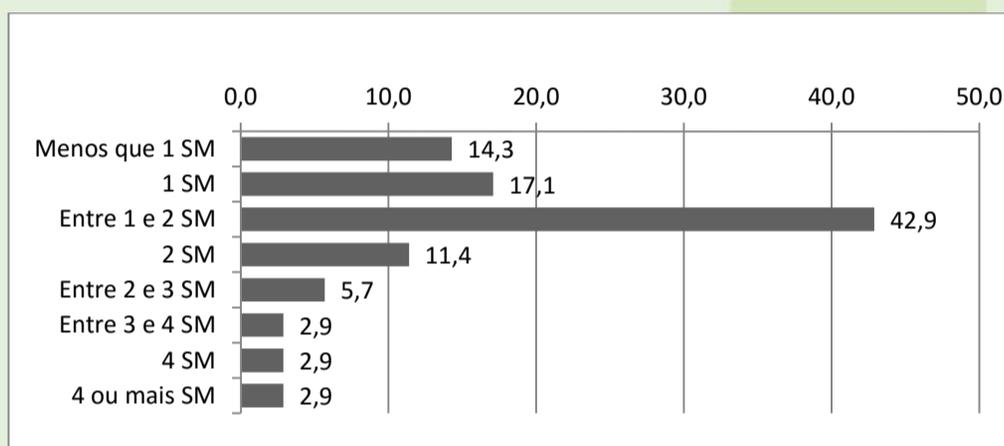
Another important factor to be noted was the presence of four fishermen aged over 60 years old, one of them aged 68 years old. Probably, these workers remain in full exercise to supplement the income of retirement pension,. Old fishermen need to make an extra effort because, despite physiological changes due to aging, they must try to maintain the same pace of work of the younger ones.

It was also identified poor education among fishermen, of whom 63% have not finished elementary school; 34.3% have only completed elementary school, 5th grade, and 12% are

illiterate.<sup>5</sup> The illiterate are spread across all age groups, even among the young ones. This percentage may even be higher, since many of those who sign their name cannot read. For them, the improvement of life is related to better education, or a better future.<sup>5</sup>

Low education level, besides reducing the possibility of working with a formal contract, increases the chances of ignorance about the health care and diseases transmitted by contaminated water. It can also hinder the articulation of this class of workers to fight for improvements in working and health conditions. Thus, they find themselves "obliged" to adopt a posture of submission to political issues related to artisanal fisheries, fitting the reality of life in which they live.

**Chart 1:** Proportional distribution of fishermen according to income, by minimum wage (N=35)



Less than 1 MW  
1 MW  
Between 1 and 2 MW  
2 MW  
Between 2 and 3 MW  
Between 3 and 4 MW  
4 MW  
4 MW or more

Considering the value of the minimum wage (MW) in 2013 of R\$ 678.00, according to the Labour Guide (2013), Figure 1 shows that 42.9% of fishermen have a monthly income between 1 MW and 2 MW. Only 25.8% of the fishermen receive monthly income over 2 MW (R\$ 1,344.00), highlighting that they have an average of 3 to 4 dependents. This fact evidences the difficult financial situation they experience. Low income makes it difficult or almost infeasible maintaining a family with dignity, even for those who wish. Many showed clear revolt over the income they receive: *"Fisherman earns very little". (F14) "...If I could pay for a good education, it would be better to choose medical, advocacy field". (F1) "I wish I could go out and try something else. Today, the fisherman does not have a car, bank account; it is a profession that does not give us feedback". (F13)*

On the other hand, the interviews allowed recognizing that some fishermen value the fishery and like to exercise it due to the possibility of freedom inherent to the profession. The freedom to "come and go", without having to commit to a boss and without being "stuck", as the following line: *"I live freely, I work when I want". (F3)*

Fishing in several other scenarios has proved to be a profession that passes from father to son. In the researched community, most fishermen also learned the profession with their fathers (31.4%). Thus, they began fishing in childhood, and reported that, during adolescence, some missed school to help their fathers on fishing and, thus, to win a "change". Study participants have been practicing fishing for an average of 21.5 years, with a minimum of 2 years and a maximum of 40 years.

However, it is clear that for the next generation things will be different. Almost 100% of respondents said they do not want their children to follow the same profession, which can be exemplified in the lines: *"No. I have never encouraged them. My 21 year old son does not even know how to paddle. There is no expectation. A lot of pollution, fish shortage".(F13)* *"No. Today I have another view. They have to study to know another world, the world is computerized". (F7)*

Regarding housing, most fishermen live in own home (82.9%) on the margins of Guanabara Bay, which facilitates access to the workplace and frees these workers from transport costs to work. The houses are simple and unfinished. It is difficult to reach running water to nearby houses on the sidelines, as there is poor sanitation. The backyards of some houses are a continuity of the Bay. So, many fishermen leave their boats on their very backyards and prepare the materials used in the fishery right there, such as nets, hooks, polystyrene containers and other paraphernalia.

When asked about the danger of the profession and the safety of vessels, most referred to climate issues and to the risk of collision with larger boats at night: *"The weather at sea. We go out and ask the Father from heaven to protect us and go ahead". (F1)* *"We are in a risk area, risk that a ship tramples, we constantly lose our nets".(F6)* *"We go out to fish, but do not know whether we go back, the boat can tap into a stone, a ship, sleep at the helm, a storm". (F13)* *"It is sacrificial and dangerous. Just for you to know, my brother drowned in a storm". (F28)*

Regarding working hours, there was an average of 11.8 hours, with a minimum of 7 hours and a maximum of 15 hours.

During the interviews, many fishermen said they go fishing in the afternoon and only return at dawn to sell the fish. When they finish the sale period, if necessary, they use the morning also for equipment repairs and preparation of material for the next fishing. Due to staying a long time at sea, fishermen are subject to unexpected accidents by climate changes, such as storms. As they have been fishing for years and therefore have a lot of experience in what they do, some fishermen go fishing alone, without aides, unlike most. This further increases the risk of accidents due to any setbacks, but, on the other hand, they do not need to divide the poor income with a helper.

Fishermen earn by working day, depending on the amount and type of fish. When arriving from fishing, the fish is put into boxes for the start of the auction. The middlemen stipulate a price well below what is found in the markets. Since fishermen cannot transport and store the goods to get a better price in major markets, fishermen submit to the price offered by middlemen. Thus, the fish is sold at a price well below what the middlemen sell to the markets and fairs.

Regarding use of sunscreen, 77.1% of fishermen do not use sunscreen. Besides, the 22.9% who use it only do it partially. Thus, despite the fishermen being part of the working day under direct sunlight, few use sunscreen.

Various reasons are given for not using this protector. Among study participants, 31 (67.7%) fishermen reported seeing this use as important. Some believe that since they have been exposed for years, they cannot be protected from future skin problems, as F28 said: "I am used to the sun on the skin." Some do not use for forgetfulness (16.1%); they only remember when they left home. Others, because they work most of the time at night (6.5%), due to the high price of the product (6.5%), which is much higher than they could afford on the income they earn from fishing and because they are not used to (3.2%).

All respondents, when asked about the use of Personal Protective Equipment (PPE), were unaware of the meaning of acronyms. After explanation, 28.6% said they did not use, and the remaining 71.4% said they used, but only partially, i.e., sometimes using gloves, sometimes using boots. The PPE, according to the reports, are not used frequently. One of the fishermen said that the use of rubber gloves, for example, impairs the sensitivity in contact with the fish: "*You have to make contact to remove the fish. Fishermen rely too much on themselves*". (F7) Few of them have life jackets, flags, or other equipment that can help in emergencies.

According to the information obtained, the main PPE used are boots (54.3%), oilskin overalls (34.3%) and rubber gloves (28.6%).

PPE is defined as any device or product, used individually by the worker, for the protection against risks that may threaten their safety and their health.<sup>10</sup> In the fishing population, however, the use of PPE is an unexplored resource, particularly among artisanal fishermen, where there is no commitment between employer and employee, and the use of PPE is therefore the sole responsibility of the fisherman himself.

Among the PPE to be adopted by artisanal fisherman, according to the Ministry of Labour and Employment, there are: life jacket, straw hat or cap, small pliers (to remove the hook from the skin), knife or machete with leather sheath, high rubber boots (when stepping on the river bottom) and heavy gloves (to handle fish and cables), besides the use of sunscreen with Sun Protection Factor (SPF) 25. In some regions of the country where fishermen fish with hand line, it is recommended using a ring made of rubber tube to protect fingers.<sup>1</sup>

The Collective Protection Equipment (CPP), in turn, should also be used. The first aid kit and the life raft are included in this group.

Contact with unhealthy environment is constant, since fishing is held at the Bay. Thus, 85.7% of fishermen come in contact with water during practically the whole fishing. Some boats are moored on the Maribondo river, located near the village that flows into the Guanabara Bay.

In days with low tide, some fishermen need to enter the river with the water up to knee level to push that little vessel up to a level where it is possible to row. Thus, when not using PPE, they may be injured because household waste is intensely dumped into the river, including glass bottles and other needlestick materials, like aluminum cans.

Contact with contaminated water can bring harm to the health of fishermen. The change of water quality is not only linked to aesthetic aspects, since apparently satisfactory

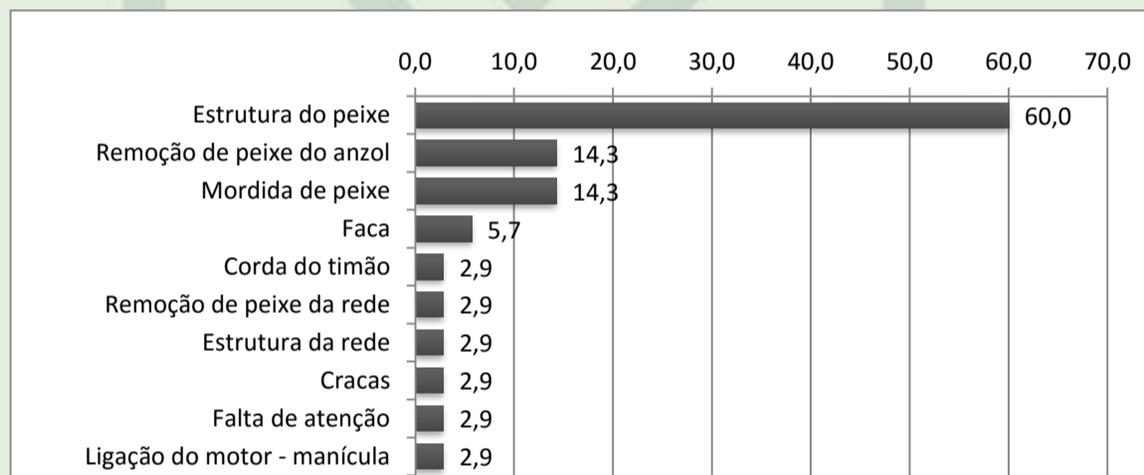
water may be contaminated, or contain pathogenic microorganisms and toxic substances to certain species that can be transmitted, which translates the physiological impact generated.<sup>10</sup>

Several diseases can be associated with water, whether as a result of contamination from human excreta or from other animals (fecal-oral route) or by the presence of harmful chemicals to human health.<sup>11</sup>

As expected, cases of injury among fishermen are very common. Of the 35 respondents, 91.4% said they had suffered some injury during the fishing activity in the years of occupation. There were no fishermen with significant injuries during the research. However, some had scars resulting from injuries of various causes during the fishery.

There are cases of simple injuries with their own hook and knives, but there are more serious cases, as, for example, a fisherman was injured with catfish structure and was hospitalized for a month. The main body parts affected are the hands (80%), followed by legs (17.1%), arm and foot (5.7%), face, different regions and knee (2.8%). As main causes of injuries, we can mention the fish structure itself (60%), removal of the fish from the hook (14.3%) and fish bite (14.3%), as Chart 2 shows.

**Chart 2:** Distribution of fishermen according to main causes of injury



Fish structure

Removing the fish from the hook

Fish bite

Knife

Tiller rope

Removing the fish from the net

Net structure

Barnacles

Lack of attention

Motor connection - crank

In this sense, a study of work accidents with fishermen working in Araguacema river, in Tocantins, reveals that the main cause of accidents is due to injury by the fish at the time of removing the it from the hook or net, and lower and upper limbs body parts are the most harmed.<sup>11</sup> Physical constraints through wounds or superficial lesions have also been identified as a major cause of accidents involving fishermen in an international study in Portugal.<sup>12</sup>

Most of the study participants said that, when suffering injuries, they choose to do nothing (22.9%), others (17.1%) say that they wash the wound site with soap and water when

arriving from fishery. In more severe cases, they seek for a health unit (8.6%) or to the emergency service (8.6%).

It is noted also the use of various substances traditionally used by popular wisdom, such as coffee powder (2.9%), catfish eye secretion (2.9%) and sea water (8.6%). Such substances do not have scientific evidence in the healing process and can impair it and favor wound contamination by pathogens present in water.

Skin infections caused by *Vibrio* species settle after exposure to aquatic environments, and lesions begin with small sores, sometimes already existing, or by lacerations caused by accidents in the workplace. There are cases of septic superficial injuries, whose patients were exposed to the marine environment or other water surfaces, and from which were isolated several species of *Vibrio*, providing further evidence of the possible pathogenic role of this bacterium. Many of these skin lesions present mixed infections and ubiquitous (*Enterobacteriaceae*) and commensal organisms associated with the skin (*Staphylococcus* and *Streptococcus*) can be expected to be present in any injury, regardless of location of contamination.<sup>13</sup>

## CONCLUSION

The poor working conditions of Cassinu community fishermen point to risk of injury and contamination thereof by microorganisms present in water contaminated, due to the non-use or partial use of PPE, poor housing conditions, ineffective sanitation, risk of skin damage (due to continued sun exposure without the necessary protection) and excessive workload. These conditions are aggravated by the lack of labor protection due to the informality of artisanal work, little education and minimal income from the activity.

Although fishing is, historically, a profession passed from parents to children, changes in expectations were identified in the speech of fishermen, which indicates dissatisfaction with the profession today. This fact is corroborated by the decline in environmental conditions of that place in recent decades due to the throwing of household waste and industrial effluents in Guanabara Bay and in rivers that flow into there.

It is understood that the real health care professional must commit to broader issues involving environmental, economic and social issues, being a person engaged in fighting against social (in) visibility and for recognition of the rights of the Brazilian population.

Thereafter, the objective of this study was to contribute that nurses and other health professionals worry about the people living on the margins of scientific and technological development, for whom science is something unattainable. Authors also aimed to encourage new research aimed at fishermen working conditions, that generate reflections on possible educational strategies that foster the engagement of these workers in the fight for improvements in the profession, environmental education and health.

## REFERENCES

1. Brasil. Ministério do trabalho e Emprego. Normas Regulamentadoras de Segurança e Saúde no Trabalho - Norma Regulamentadora N°6. Equipamentos de Proteção Individual. Brasília: Ministério do trabalho e Emprego; 2011.
2. Brandão AA. Miséria da periferia: desigualdades raciais e pobreza na metrópole do Rio de Janeiro. Rio de Janeiro (RJ): Pallas; 2004.
3. Filgueiras LAM, Druck G, Amaral MF. O conceito de informalidade: um exercício de aplicação empírica. Caderno CRH. [serial on the Internet]. 2004 [cited 2013 Nov 05];17(41), 211-29. Available from: <http://www.cadernocrh.ufba.br/viewarticle.php?id=16>
4. Oliveira RP, Iriart JAB. Representações do trabalho entre trabalhadores informais da construção civil. Psicol. estud. [serial on the Internet]. 2008 [cited 2013 Nov 05]; 13 (3):437-45. Available form: [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S1413-73722008000300004](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1413-73722008000300004)
5. Rosa MFM, Mattos UAO. A saúde e os riscos de pescadores e catadores de caranguejo da Baía de Guanabara. Ciênc. saúde coletiva. [serial on the internet] 2010 [cited 2013 Nov 25]; 15(Supl. 1):1543-52. Available from: [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S141381232010000700066](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S141381232010000700066)
6. Grohmann PA. Hidroids (Cnidaria, Hydrozoa) of the intertidal zone of Governador and Paquetá islands, Guanabara Bay, Rio de Janeiro, Brazil. Iheringia, Sér. zool [serial on the Internet] 2009 [cited 2013 Out 2013] 99(3): 291-94. Available from: <http://www.scielo.br/pdf/isz/v99n3/10.pdf>
7. Pereira E, Baptista Neto J, Smith BJ, Mcallester JJ. The contribution of heavy metal pollution derived from highway runoff to Guanabara Bay sediments - Rio de Janeiro / Brazil. An. acad. bras. ciênc. [serial on the Internet] 2007 [cited 2013 Out 2]; 79(4): 739 - 750. Available from: <http://www.scielo.br/pdf/aabc/v79n4/a13v79n4.pdf>
8. Santos ES, Carreira RS, Knoppers BA. Sedimentary sterols as indicators of environmental conditions in Southeastern Guanabara's Bay, Brazil. Brazilian Journal of Oceanography [serial on the Internet] 2008 [cited 2013 Nov 02]; 56 (2): 97-113. Available from: <http://www.scielo.br/pdf/bjoce/v56n2/03.pdf>
9. Fassarella SS. A Vez e a Voz de Mulheres que atuam na atividade da pesca da Vila São Miguel (RS): Trajetória e Perspectivas [dissertação]. Rio Grande do Sul (RS): Fundação Universidade Federal de Rio Grande; 2007.
10. Braga B. Introdução à Engenharia Ambiental. São Paulo (SP): Prentice Hall; 2002.
11. Baptista Neto JÁ, Wallner - Kersanach M, Patchinelam SM. Poluição Marinha. Rio de Janeiro (RJ): Interciência; 2008.
12. Jacinto C. Investigação sobre as causas dos acidentes de trabalho nas pescas. Portugal, . [serial on the internet] 2002 [cited 2012 Out 19]. Available from: <http://www.mutuapescadores.pt/new/noticias.php?pagina=noticiacat&cat=12&acao=corponoticia&codigo=140>.
13. Rodrigues SMA, Gonçalves EGR, Mello DM, Oliveira EG, Hofer E. Identification of *Vibrio* spp bacteria on skin lesions of fisherman in the country of Raposa-MA. Rev. Soc. Bras. Med. Trop.

[serial on the Internet]. 2001 [cited 2013 May 18] 34(5):407-11. Available from: [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0037-86822001000500002](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0037-86822001000500002)



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