

## THE MARITIME MEDICINE IN MOROCCO: REALITY AND FUTURE PROSPECTS

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**INTRODUCTION:** The maritime sector in Morocco constitutes an important economic and social lever of the country, in particular with the two maritime facades of the country. If the fishing sector is classically the dominant part of this system, the change experienced by the Moroccan economy over the past two decades and the development of the port infrastructure of the merchant marine have allowed the latter to regain its importance. This development of the marine sector has repercussions on seamen and calls into question the importance of the social issue in this area, particularly in relation to the medical care of this population.

**OBJECTIVES:** To research the scope of medical care issues related to merchant marine workers.

**MATERIALS AND METHODS:** This study was based on the collection of data: legislative texts on occupational health and safety; statistical data from administrations (the Ministry of Health and the Ministry of Marine Fisheries), the General Medical Council of Morocco, scientific societies and associations for occupational health and marine medicine. The analysis included socio-demographic and professional characteristics, training, evaluation of activities, limitations in its implementation and priority recommendations for improving the situation.

**RESULTS AND DISCUSSION:** Morocco's health system includes two areas: the commercial and fishing sectors. The study showed that there are no specialized medical centers in any of the sectors, and medical care for this population is at a low level. There is no Moroccan telemedicine system. Currently, Morocco has already defined a legal framework for this practice.

**CONCLUSION:** This article sheds light on the health system of seamen in Morocco while highlighting its strengths and weaknesses as well as avenues for reflection for the improvement of existing anomalies.

**KEYWORDS:** marine medicine, seafarers, fishermen, health, Morocco

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## МОРСКАЯ МЕДИЦИНА В МАРОККО: РЕАЛЬНОСТЬ И ПЕРСПЕКТИВЫ

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**ЦЕЛЬ:** Исследование проблемы медицинского обслуживания работников торгового флота.

**МАТЕРИАЛЫ И МЕТОДЫ:** Исследование было основано на сборе данных: законодательных текстов по охране труда и технике безопасности; статистических данных от администраций (Министерства здравоохранения и Министерства

морского рыболовства), Генерального медицинского совета Марокко, научных обществ и ассоциаций по охране труда и морской медицине. Анализ включал социально-демографические и профессиональные характеристики, обучение, оценку деятельности, ограничения ее осуществления и приоритетные рекомендации по улучшению ситуации.

**РЕЗУЛЬТАТЫ И ИХ ОБСУЖДЕНИЕ:** Система здравоохранения Марокко включает в себя две области: торговый и рыболовный секторы. Исследование показало, что ни в одном из секторов нет специализированных медицинских центров и медицинское обслуживание занятых в этой сфере людей находится на низком уровне. В Марокко нет системы телемедицины. В настоящее время в Марокко уже определены правовые рамки для этой практики.

**ЗАКЛЮЧЕНИЕ:** Статья проливает свет на систему здравоохранения моряков в Марокко, освещая ее сильные и слабые стороны, а также пути улучшения существующих аномалий.

**КЛЮЧЕВЫЕ СЛОВА:** морская медицина, моряки, рыбаки, здоровье, Марокко

**Introduction.** Morocco has an important maritime coast with two facades: on the Mediterranean Sea and the Atlantic Ocean, the length of the coastline is over 3500 km.

The marine sector provides more than 140.000 direct jobs especially in the fishing sector: 120.000 and only 10.000 in the merchant marine.

Moroccan regulation for seafarers' health is old, it goes back to the year 1919 with the Law of Maritime trade. This law stipulates in its article 167 bis that *"The entry of a seafarer in the crew register of a ship of more than 50 gross tonnage barrels, usually making sea trips of more than seventy-two hours, is subject to a medical examination, which is at the expense of the shipowner, by the ship's doctor, or, in the absence of a doctor on board, by a doctor approved by the maritime authority, and establishing that boarding the seafarer does not present any danger to his health or that of the crew"*.

The 1996 was a crucial year for the health of seafarers in Morocco, there was a split in the ministry responsible for seafarers with a separation to two sectors: the maritime fishing sector (Ministry of Fisheries and Agriculture) and the merchant marine (Ministry of transport). The result was a maritime medicine attendance with two speeds.

**Organization of maritime medicine in Morocco:**  
— **In the merchant marine**

It contributes 1% to 1.5% of GDP without ancillary activities and it employs 10.000 seafarers.

The trade is a strategic vector of the Moroccan economy. 98% of Morocco's foreign trade uses the sea route. The Moroccan freight transport fleet consists on vessels belonging to seven principal shipping companies.

The passenger shipping is well developed especially in the Strait of Gibraltar between Morocco and Spain, but also to France and Italy. More than 5 million passengers and 1,5 million vehicles transit annually.

The medical care for seafarers is regulated by the Law of Maritime Trade (1919) and since 2013 to the MLC 2006 that depending on the case, it provides for a doctor on board or qualified medical officer. The medical fitness for seafarers is ensured by general practitioners in the private sector whom must receive a training course according to STCW and MLC requirements and ILO standards. They must receive an agreement of the ministry of transport for this task.

— **In the fishing sector**

Morocco is one of the most fish-rich areas in the world, it ranks first among fish producers in Africa and 25<sup>th</sup> in the world. It is also the world's largest exporter of sardines. The fleet is around 18.000 boats (310 for deep sea fishing, 1.750 for costal fishing and 15.940 for artisanal fishing). It employs 109.000 fishermen (7.100 in the deep-sea, 60.000 in the costal fishing and 41.900 in artisanal fishing) and contributes 2% to 3% of the gross domestic product (GPD).

The medical care for fishermen is regulated by the convention of 1996 between the Ministry of Health and the Ministry of Marine Fisheries related to the organisation of the fishermen's health prevention. It provides the establishment of fishermen's health centres at the main ports (22 centres) with physicians from public health sector. Even if the ILO convention number 188 was ratified since 2013 and in force presently in Morocco, there is some delay in the harmonization of internal regulation accordingly.

The fishermen's health centres ensure several missions such as medical fitness for fishermen (occupational medicine), prevention of occupational accidents and diseases, improvement of the working conditions of fishermen and other preventive activities (vaccination, hygienic inspection of the vessel, the port...). They also provide medical attendance for fishermen (medical care) with consultations and emergency first aid (table) [1, pp. 110–117].

Table  
Activity statistics of Moroccan fishermen medical centres during 2017

Таблица  
Статистика деятельности медицинских центров марокканских рыбаков за 2017 год

Type of activity	Number
Medical care consultations	9.243
Paramedical care attendance	11.003
Emergency attendance	653
Medical fitness visits	44.267
Hiring visits	16.015
Periodic visits	28.252

The tables below show respectively the activity statistics of Moroccan fishermen medical centres and diseases statistics of Moroccan fishermen in the medical centres during the year 2017 (figure)<sup>1</sup>.

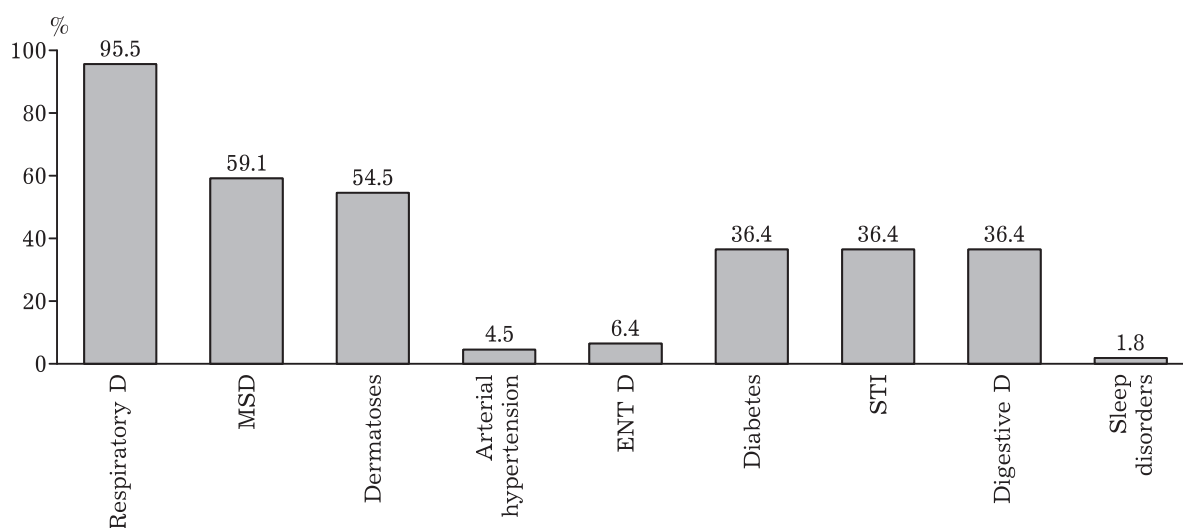


Figure. Diseases statistics of Moroccan fishermen in the medical centres during 2017  
Рисунок. Статистика заболеваний марокканских рыбаков в медицинских центрах за 2017 год

**Epidemiologic profile of the Moroccan seaman**

During last decade there were many studies that were undertaken among seamen, these studies interested especially the fishing sector with a great contribution of the physicians of the medical centres and the Moroccan Society for Maritime Medicine.

The biggest problem for seafarers in Morocco remains musculoskeletal disorders (MSD): 61,9% among artisanal fishermen in the north of Morocco [2, pp. 22–27], this problem is very accentuated given that the work in the artisanal fishing

sector is mainly manual. Indeed, these MSD in the artisanal fishing related to manual activity are found on-board buy also ashore, especially during fishing net repair operations. A study in the north of morocco found a rate of 8.4% Carpal Tunnel Syndrome among artisanal fishermen [3, p. 710].

Skin diseases are dominated by palmar hyperkeratosis (67.1%) and fungal infections (44.4%) [4, pp. 22–27], they reflect the work atmosphere in the marine field. Sexually transmitted infections classically widespread among fishermen are no exception among Moroccan ones, they are due to risky behaviour. Il a study in the north of Morocco we found that 32% of fishermen had at least two sexual partners and 26% have had sex with sex workers [5, pp. 26–30].

Respiratory diseases are pathologies reflecting tobacco relating sickness: Chronic bronchitis among 5.6% fishermen and chronic obstructive

pulmonary disease (COPD) in 3.8% during a study to evaluate the prevalence of chronic obstructive respiratory diseases amongst fishermen [6, pp. 13–21]. Asthma was found in 6.8%. Added to tobacco, other respiratory diseases including lung cancer are caused by the multiple source of occupational exposure on board. Also, obstructive sleep apnea-hypopnea syndrome (OSAHS) is not uncommon, a study for screening performed among a population of fishermen in Tangier using the Berlin questionnaire found a rate of

<sup>1</sup> La mer en chiffres. Report for the year 2017. Department of Maritime Fisheries, Ministry of Agriculture, Maritime Fisheries, Rural Development and Water and Forests, Rabat, Morocco. Available on: <http://www.mpm.gov.ma/wps/wcm/connect/67d407dc-bd9b-4d52-a6da-15dcfb172311/Mer+en+Chiffres+DPM+2017.pdf?MOD=AJPERES&CACHEID=67d407dc-bd9b-4d52-a6da-15dcfb172311>

4.1% [7, pp. 11–21]. The same study tried to detect sleep disorders among fishermen, especially those who carry out shift work, especially in the coastal fishing like sardine boats and longliners using the scale of Epworth, it confirmed an insomnia rate of 55.8% and a daytime sleepiness in 68.1%.

Also, psychological disorders of seafarers are well present among fishermen with an occupational stress in 53,9% of cases [8, p. 657], another study for occupational stress among women who practice artisanal fishing using the *Job Content Questionnaire of Karasek* found a rate of *Isostress* estimated at 62.3% [9, pp. 710–711]. Also, a study performed for screening psychosocial risks among fishermen using the Maslow Burnout Inventor (MBI) of *Maslach* found a rate of burnout syndrome estimated at 16.1% [10].

In addition, behavior's fishermen also shows some anomalies, a study performed in northern Morocco showed a prevalence of the ordalic behaviour (Risk-taking behaviour) estimated at 66.4% [11, pp. 83–89]. This behaviour may explain some fatal maritime accident in the country. In the coastal fishery sector in Morocco, fatal occupational accidents accounted for 14.2% of occupational accidents between 2007 and 2008 [12].

Addictions are a serious problem among fishermen, as study performed in northern Morocco to screen cannabism and other addictions among fishermen found estimated rates of 78.2% for smoking tobacco, 23.5% for alcoholism and 42.3% cannabism [13, p. 499]. These rates make this category of workers vulnerable to chronic diseases, especially cardiac and cancerological diseases, the problem is further accentuated with a bad lifestyle. A simultaneous study performed in the north of Morocco and Catalan region in Spain showed that 80.2% don't practice sports, 38.4% consummate fast food, 70.2% nibble between meals [14, pp. 557–558].

### Results and Discussion

Health system in the maritime filed is going with two speeds. The first one for the merchant marine which is well organized and structured under international standards. its target population belongs to middle and high socioeconomic level. However, there is no special medical centres (only private physicians' office) which explains the lack of epidemiological data with serious problems during COVID-19 pandemic. Also, there is no objective requirement for the agree-

ment delivered by the ministry of transport to the physicians in charge of this mission.

The second one dedicated to the fishing sector which is not enough organized but well-structured even if international standards not completely applied yet. This sector suffers from an insufficient medical coverage, there is only one physician for 5.000 fishermen which is one of the lowest rates among working population [15]. Also, there is a multiplication of missions and tasks what makes physicians overtaken by events, in 2017, only 36.9% of fishermen have benefited from occupational medical visits and only 19% of hygienic inspection of the vessel were performed with an inspection's committee containing a physician. Also, their participation in activities of health, safety and environment is low: 44%.

For both sectors, there is a lack of Moroccan system for telemedicine what is not in conformity with the dispositions of the MLC 2006 in force in the country and which required all flag states to “provide seafarers with medical care as nearly as possible equivalent to the care they would receive ashore”, and to “ensure [...] that medical advice by radio or satellite communication to ships at sea is available at any hour of the day or night”. Currently, the legal framework is now defined already in morocco for this practice. The law 131 – 13 of February 19, 2015 relating to the practice of medicine, introduced in section 4 of its chapter III (Art 99 to 101) telemedicine and its global outlines, and the implementing decree 2–18 – 378 has defined its different types [16]. This topic was well discussed during the congress of the ATLAFCO (Ministerial conference on fisheries cooperation among African states bordering the Atlantic Ocean) this year in tangier (Morocco) and makes the need to this technology makes a key point into final recommendations of this congress<sup>1</sup>.

Another important problem, there is no coordination between both sectors what resonates badly the quality of the care in both sectors in particular with regard to the standardization and unification of procedures.

Finally, there is no specialized maritime medicine diploma required by both sectors. Even if the majority of seamen physicians in Morocco are specialized in occupational medicine but this fact is due to the own desire of practitioners to be

<sup>1</sup> Final report of the Visio conference “La nécessaire protection des marins pêcheurs durant la pandémie de Covid-19: La promotion de la médecine de mer”. Available on: [https://www.comhafat.org/fr/files/actualites/doc\\_actualite\\_40709114.pdf](https://www.comhafat.org/fr/files/actualites/doc_actualite_40709114.pdf).



performant and efficient. Some ones are graduated in maritime medicine (Diploma of university in maritime medicine of Brest (France) or the maritime health Master degree of Cadiz (Spain).

To partially remedy this problem, Ministry of fishing organized some special training courses for its physicians with the support of the maritime medicine department of University of Brest<sup>1</sup>. Also, The Moroccan Society for Maritime Medicine created in 2013 continues making his role to promote the training of maritime physicians and other partners in the field of maritime health and safety. It benefits from the support of the Spanish and French Societies for Maritime Medicine and of the International Maritime Health Association (IMHA). It organized six national congresses for maritime medicine and one International Hispano Francophone Congress which took place at Assilah (Morocco) in November 2018.

#### Future prospects:

Create telemedicine centers as soon as possible with trained doctors in this medical technology;

Increase the number of fishermen's doctors and fishermen's medical centers;

Institute objective standards for fitness seafarer's' agreement delivery;

Establish special training in maritime medicine in Morocco according recognized maritime med-

icinediploma and recognize this discipline as a full-fledged medical specialty;

Unify the medical care of seafarers in two sectors, in particular by creating approved maritime medicine centers for both sectors, as is the case for the *Institut Social de la Marina* in Spain;

Set up an efficient data collection system for seafarer's health;

Develop scientific research in the field of maritime health, in particular with the support of university centers.

#### Conclusion

The health of seafarers is marked in Morocco in particular by this duality of care between the merchant marine sector and that of sea fishing, this duality generates marked differences in terms of the quality of care for seafarers, the skills of seafarers' physicians, and the unification of care procedures.

The COVID-19 pandemic that Morocco is experiencing like other countries on the planet has further accentuated this difference and opens the door to reflection on a unification of the two systems once and forever.

Hope lies in a decisive intervention by decision-makers to remedy this situation. The establishment of an efficient telemedicine system is an urgent need for the country.

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#### REFERENCES/ЛИТЕРАТУРА

- Laraqui O., Manar N., Laraqui S., Ghailan T., Deschamps F. Occupational safety and health in maritime sector in Morocco 60 years after independence: current state, constraints and prospects // *Int. Marit. Health*. 2018. Vol. 69, No. 2. P. 110–117.

<sup>1</sup> Rapport d'activité du Département de la Pêche Maritime — Année 2018. Available on: <http://www.mpm.gov.ma/wps/wcm/connect/2a588972-0296-4455-ab6f-a5a6fce4de23/Rapport-Activit%C3%A9-DPM-2018-VF.pdf?MOD=AJPERES&CACHEID=2a588972-0296-4455-ab6f-a5a6fce4de23>.

2. Ghailan T. Assessment of MSDs among fishermen in the artisanal sector in northern Morocco. Proceedings of the 29<sup>th</sup> National Congress of Occupational Medicine. Chefchaouen, November 6<sup>th</sup> // *Int. Marit. Health*. 2021. Vol. 69, No. 1. P. 22–27. doi: 10.5603/IMH.2018.0004.
3. Ghailan T., Mourabiti I., Canals L., Laraqui Ch., Benchekroun TH. Évaluation du syndrome du canal carpien chez le marin pêcheur du secteur artisanal au Maroc // *Arch. Mal. Prof.* 2020. Vol. 81, No. 5. P. 710.
4. Laraqui O., Manar N., Laraqui S., Ghailan T., Deschamps F. Prevalence of skin diseases amongst Moroccan fishermen // *Int. Marit. Health*. 2018. Vol. 69, No. 1. P. 22–27. doi: 10.5603/IMH.2018.0004.
5. Laraqui S., Laraqui O., Manar N., Ghailan T., Deschamps F. The assessment of seafarers' knowledge, attitudes and practices related to STI/HIV/AIDS in northern Morocco // *Int. Marit. Health*. 2017. Vol. 68, No. 1. P. 26–30. doi: 10.5603/IMH.2017.0005.
6. Laraqui O., Hammouda R., Laraqui S., Manar N., Ghailan T. Prevalence of chronic obstructive respiratory diseases among fishermen // *Int. Marit. Health*. 2018. Vol. 69, No. 1. P. 13–21. doi: 10.5603/IMH.2018.0003.
7. Ghailan T. Troubles du sommeil chez les marins pêcheurs des palangriers et sardiniers de Tanger // *Med. Mart.* 2009. Vol. 9, No. 2. P. 11–21. doi: 10.1016/j.admp.2020.03.749.
8. Laraqui O., Manar N., Laraqui S., Ghailan T., Deschamps F. Perception des risques professionnels, stresseurs et stress des chauffeurs de taxi // *Arch. Mal. Prof.* 2020. Vol. 81, No. 5. P. 657.
9. Ghailan T., Mourabiti I., A. Ahami, Benchekroun T.H. Stress professionnel et TMS chez les femmes en pêche artisanale: cas des femmes plongeuses pour la collecte des oursins de mer // *Arch. Mal. Prof.* 2020. Vol. 81, No. 5. P. 710–711. doi: 10.1016/J.ADMP.2020.03.726.
10. Ghailan T. Psychosocial risks and burnout syndrome among fishermen. *Proceedings of the 28<sup>th</sup> National Congress of Occupational Medicine*. Casablanca, October 26<sup>th</sup>, 2019.
11. Laraqui O., Laraqui S., Manar N., Sahraoui M.Y., Sebbar L., Ghailan T. Risk-taking behaviours among fishermen in Morocco by evaluation the ordinal functioning // *Int. Marit. Health*. 2017. Vol. 68, No. 2. P. 83–89. doi: 10.5603/IMH.2017.0016.
12. Ghailan T., Caubet A., Verger C. Prévalence des accidents du travail dans le secteur de la pêche côtière au Maroc. Proceedings of the 26<sup>th</sup> Mediterranean international congress of occupational medicine // *Rennes*. May 19<sup>th</sup>–20<sup>th</sup>, 2011.
13. Ghailan T., Belhaje M., Aoudi Y., Estopá Pujol H., Brochard P. Évaluation du cannabisme chez les gens de Mer au nord du Maroc // *Arch. Mal. Prof. Env.* 2012. Vol. 73, No. 3. P. 499. doi: 10.1016/j.admp.2012.03.194.
14. Ghailan T., Estopá H., Alcolea R.M., Herrera M.J., Canals M.L., Marrakchi M.M. Comparative study of lifestyles and some unhealthy habits in coastal fishermen of the Tangier region coast (Morocco) and the coast of Catalonia (Spain) // *Arch. Mal. Prof.* 2013. Vol. 74, No. 5. P. 557–558. doi: 10.1016/j.admp.2013.07.115.
15. Ghailan T. Health and safety of fishermen // *Proceedings of the Scientific day "Fisherman health"*. Ministry of fisheries, Tangier, December 3<sup>rd</sup>, 2021.
16. Ghailan T. Telemedicine in the maritime sector in Morocco, what's opportunities? // *Proceedings of III international conference of the Centre of Corporate Medicine*. Tomsk (Russia), September 9<sup>th</sup>–10<sup>th</sup>, 2021.