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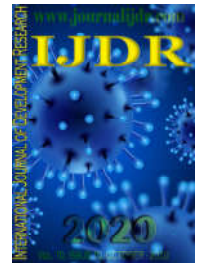
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RESEARCH ARTICLE

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PERCEPTION OF VACCINATION BY ADULT PATIENTS CONSULTING AT THE CONSULTATION AND DENTAL EMERGENCY SERVICE

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ABSTRACT

The activity of dentists has certain particularities. It involves a large number of invasive acts, is particularly exposed to blood and biological products and uses complex instruments in a naturally septic environment. Aware of this, dentists implement a set of procedures to ensure the safety of patients and the healthcare team, vaccination remains the best means of prevention with a dual role: to protect staff and patient consultants. Thus, the objective of this work is to evaluate the perception of vaccination by adult patient consultants at the level of the consultation service and dental emergencies, CHU IBN ROCHD Casablanca. This is a cross-sectional study with an analytical focus, carried out at the Dental Consultation and Emergency Department, CHU IBN ROCHD Casablanca, between 29 October and 07 December 2018. Patients voluntarily completed an anonymous questionnaire that collected patients' socio-professional characteristics, vaccination status, knowledge of vaccinations and adherence or reluctance to vaccination. The study was conducted with 200 patients, more than half of whom do not have a health/vaccination record and have never had a booster vaccination. This is explained by the lack of knowledge on the seriousness of infectious diseases, as well as the risk of transmission in healthcare settings, and in particular tetanus disease, all of which is unaware of the mode of transmission and the risk of contamination associated with invasive procedures performed in dental care settings. Only 9% of the patients questioned are reluctant to be vaccinated, which explains why the non-vaccination of patients is linked to the lack of knowledge of the risks associated with the latter, since not all patients are aware of the vaccines required in Morocco, nor of the necessary vaccines before performing dental treatment and for which tetanus is an obligation. All these results suggest that the approach to be followed to improve patient information and awareness levels should be reviewed in order to increase vaccination coverage and avoid contamination related to health care services, particularly dental care.

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INTRODUCTION

Vaccines save millions of lives around the world every year and play a vital role in protecting against certain infectious diseases. Healthcare-associated infections affect millions of people around the world each year, many people seek care every day, and some may be more vulnerable to infection or carry a communicable infection, as well as " is a high risk environment with high exposure to accidents and contaminations related to blood and body fluids, the risks are multiple, they can be biological in nature due to exposure to biological agents such as microorganisms, as they may be of an allergic nature between patients, or of a toxin nature of which tetanus is the most frequent case (Bougataya, 2004).

Biological risks are the most important and most encountered in healthcare services, but we must not neglect the presence of other risks linked to other factors and for which little attention is paid. physical risks linked to ionizing radiation, postures, poor lighting, noise, hyperbaric environment and thermal burns, and chemical risks linked to many chemical agents used in hospitals such as anesthetics, sterilization products, drugs, cytostatic agents, etc (Bougataya, 2004). The exposure to these various risks and the seriousness of certain pathologies, impose the implementation and the use of knowledge in the field, with regard in particular to the evaluation of these risks, the evaluation of the knowledge of the patients concerning these risks and the means of prevention against them, as well

as the vaccination status of patient consultants concerning vaccines which are subject to an obligation according to the vaccination schedule. Vaccination is therefore the most effective way of protecting oneself against the most serious infectious diseases, for which vaccines have been developed which are both well tolerated and effective, and these are the vaccines for which there are official recommendations. Considered the best way to prevent infectious diseases, vaccination achieves two objectives at the same time, providing individual protection as well as collective protection, by limiting the circulation of pathogens, with the possibility of eliminating these diseases, thus making it possible to fight and eliminate potentially fatal infectious diseases, and to prevent between 2 to 3 million deaths per year worldwide (Gouvernement du Québec, 2017). However, the majority of patients ignore the importance of adhering to the vaccination and vaccination schedules before going to health services to avoid contamination or transmission of infectious diseases. Thus, the main objective of this work is to study the perception of vaccination in adult patients consulting the dental consultation and emergency department, CHU IBN ROCHD Casablanca, and the specific objectives concern, the analysis of patient knowledge on vaccines, their immunization status, and the importance and purpose of vaccination.

MATERIALS AND METHODS

Study type: This is a single-center cross-sectional study for analytical purposes studied over a short period of time and on the patients present at the time of the survey, and which is based on a single examination on individuals allowing statistics and hypotheses to be obtained. to analyze.

Goal of the study: Study the perception of vaccination by adult patients consulting the dental consultation and emergency department, CHU IBN ROCHD Casablanca, in order to assess patients' knowledge of vaccines, their vaccination status, as well as the importance and vaccination goal.

Place of study: The study took place at the dental consultation and emergency department, CHU IBN ROCHD Casablanca, managed by the head of department Pr. M. SIDQUI.

Duration: The study lasted approximately 6 weeks, running from October 29 to December 07, 2018.

Population

Inclusion criteria

- Patients of both sexes
- Adult patients aged 15 and over
- Patients consulting at the level of the dental emergency service
- Cooperating and motivated patients

Exclusion criteria

- Patients under 15 years of age
- Patients consulting the dental consultation and treatment service
- Reluctant patients refusing to participate in this study

Sample size: With a random sample of people, the size or total number of people in the group covered by our study was 200 patients meeting the above criteria.

Equipment: The study was carried out using an anonymous questionnaire allowing to collect socio-professional information of the patient, his age, his sex, as well as on his general state, his knowledge on vaccinations and vaccine-preventable diseases, his vaccination status, its adhesion or its reluctance to vaccination....

Method and course of the study

Bibliographic search: It is an integral part of the work, making it possible to find documents, in order to better understand, improve one's knowledge, as well as deepen the subject of study. Several tools were used to find references and sources of information about the subject:

- Search engines used: Pub Med, Google Scholar,
- Google Chrome, Science Direct
- The documents used: books, articles, theses, books, reports
- Keywords used: vaccination, vaccine, dental, healthcare environment, infections, prevention, etc.

Preparation of work material: To carry out this survey, a questionnaire was developed in consultation with the head of the dental consultation and emergency department.

Pre-survey: A pre-survey was carried out on a sample of ten patients, whose objective was to validate the method by treating the problems encountered during the survey, and to try to find solutions.

Investigation

It took place in 2 stages:

- Consultation of patient files, in order to collect the necessary information, and fill in the appropriate part in the questionnaire.
- A questioning of the patients to fill in the other parts, and complete the other information concerning their vaccination status, knowledge of vaccinations as well as adherence or reluctance to vaccination.

Difficulties

- No study like ours has been done before, which forced us to define our own parameters.
- Interrogation was often interrupted because the patients were summoned to the treatment rooms by the treating physicians.
- Difficulties interviewing patients and completing the questionnaire simultaneously.
- Population of low socio-economic level and low level of education, which made communication with patients difficult.
- Refusal of some patients to answer the questionnaire.

Analysis and exploitation of results: After entering data or results in Excel using different codes according to each variable, these were processed and analyzed on other computer

software (SPSS 20) in collaboration with Pr. HOUSSBANE from the IT department of the faculty of medicine and pharmacy of Casablanca, in order to obtain graphs allowing the analysis and the discussion of the results. The analysis was carried out in 2 parts, a descriptive part and an analytical part. The descriptive part makes it possible to describe the data according to mathematical calculations, by analyzing and classifying the quantitative data (Average, Standard deviation) and for which the Student Test is applied, and the quantitative data (Numbers, Percentage) confirmed by the Test of Chi2. The analytical part makes it possible to carry out united and multi-varied analyzes.

DISCUSSION OF RESULTS

During our investigation, and after obtaining the first results, these were discussed and evaluated as the investigation was carried out, in order to find solutions to the problems encountered during our field work. , benefit from the best working conditions, and also to have a sufficient sample for the study in a short time.

RESULTS

Characteristics of the study population

Distribution of patients by gender: On a total of 200 patients, our results show a predominance of the female sex (121 subjects), with a Sex-ratio of 0.65 (Figure 1):

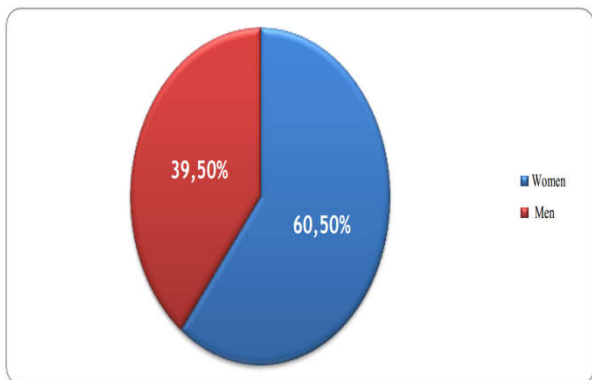


Figure 1. Distribution of patients by gender

Distribution of patients by age: The data concerning the age of the patients were collected in installments. According to Figure 2, the age of the participating patients varied between 15 and 70 years with two predominant age groups, 27.5% for patients between 25 and 35 years old, and 26% for patients aged between 15 and 25 years.

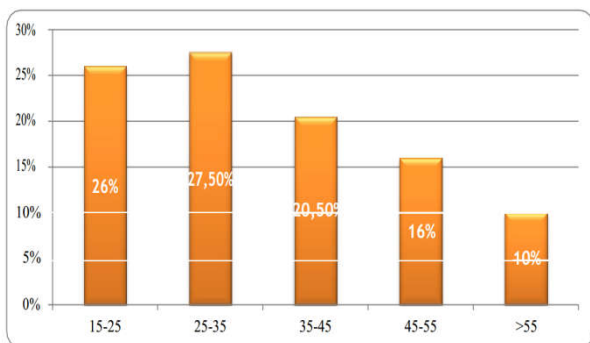


Figure 2. Distribution of patients by age

Distribution of patients according to regions: The patients who consult the dental emergency service come from several Moroccan regions and cities, ranging from Casablanca to El Hoceima, but from Figure 3, we can deduce that the vast majority of patients come from Greater Casablanca with a 95% percentage.

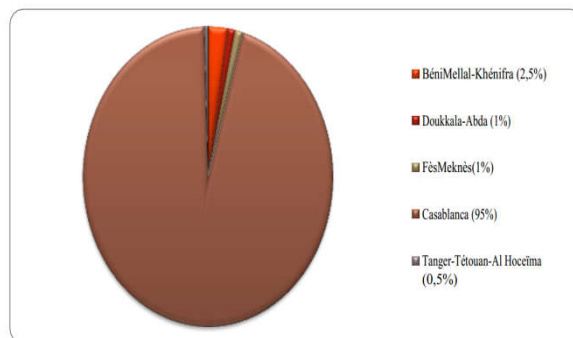


Figure 3. Distribution of patients by regions

Distribution of patients by level of study: The level of study is an important parameter for the study carried out, and according to the results obtained from Figure 4, we can see that 42% of patients do not exceed the college level, 22% of patients have not been educated, while those with a diploma represented only 5% (31/200).

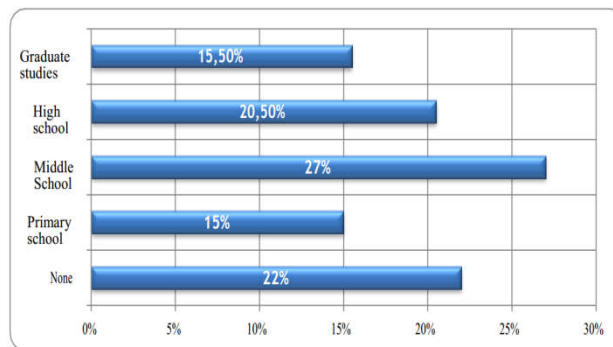


Figure 4. Distribution of patients by level of education.

Distribution of illiterate patients by sex: Illiteracy is represented by 22% of the population studied, of which 86% are women (38/44 illiterate) and 14% men (6/44 illiterate), according to Figure 5.

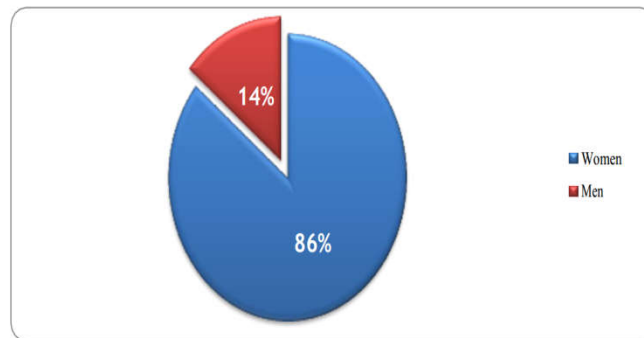


Figure 5. Distribution of illiterate patients by gender

Distribution of chronic pathologies according to age: Among the patients questioned, 78% are in good general condition, and of the 22% (n = 44) of patients suffering from a chronic pathology, 6.5% suffer from diabetes, 2.5% from anemia, 2, 5% of asthma, 2.5% of hypertension, and 8% suffer from other pathologies including epilepsy, glaucoma, cancer, etc (Figure 6).

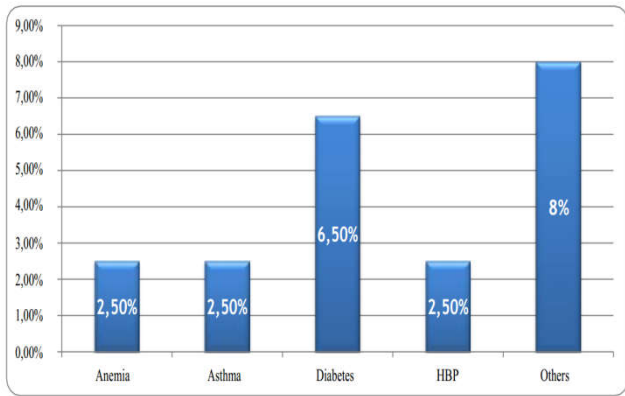


Figure 6. Rate of chronic pathologies in the population studied

Distribution of chronic pathologies according to age in the population studied: Among the 22% of patients suffering from a chronic pathology, the 15-25 age group is the least concerned (5%), compared to the 35-45 age group (32%). While the rate of chronic pathologies beyond 55 years, is 25% (Figure 7)

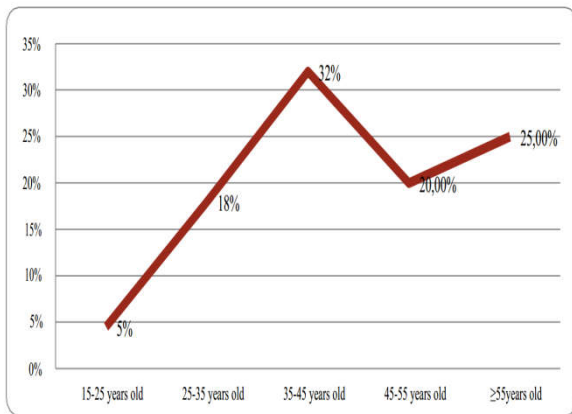


Figure 7. Distribution of chronic pathologies according to age in the population studied

Knowledge of vaccination and vaccine preventable diseases

Results on whether or not you have a health and / or vaccination record

Figure 8 shows that 47% of patients in the study population have a health / vaccination card, compared to 53% who do not.

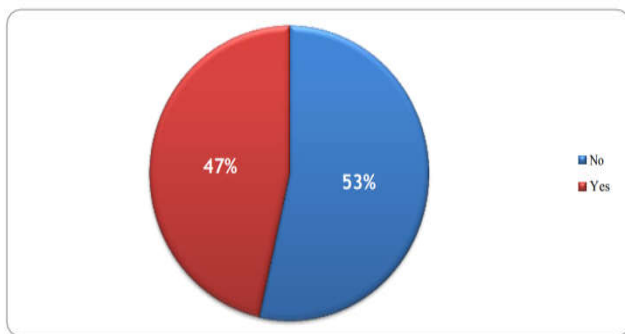


Figure 8. Distribution of patients according to whether or not they have a health / vaccination card

Results on the Rate of vaccinated patients: Of the 200 people questioned, 133 patients have never had a booster, or 66.5% of the study population, while 67 patients (33.5%) have already had a booster (Figure 9)

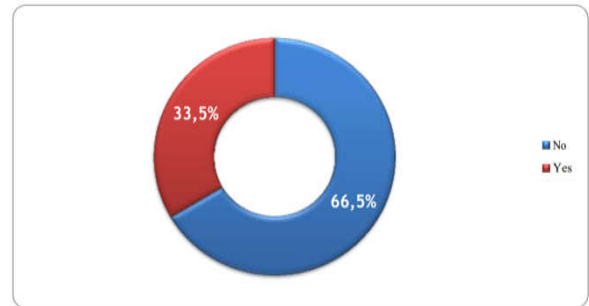


Figure 9. Rate of vaccine booster in the studied population

Rate of patients vaccinated by sex: Of the 67 patients who have already received a booster, 88% (n = 59) are women, compared to 12% (n = 8) of men, with a sex ratio of 0.13(Figure 10)

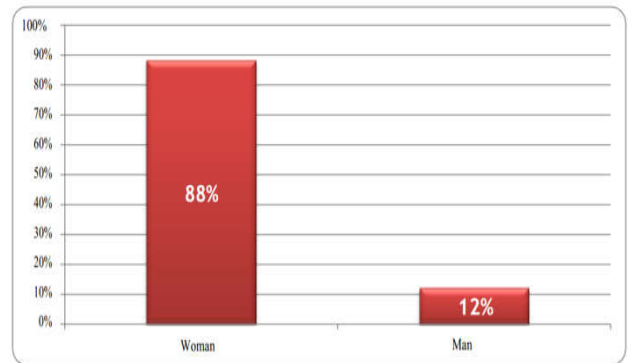


Figure 10. Vaccine booster rate by gender

Rate of patients vaccinated according to age: The distribution of vaccinated patients according to age is illustrated in Figure 11. Thus, we see that the rate of vaccine booster increases with age at the start, it goes from 9% to 34.5% for the age groups. " ages 15-25 and 25-35 respectively. Then this rate decreases by 34.5% to reach 10% in subjects over 55 years of age.

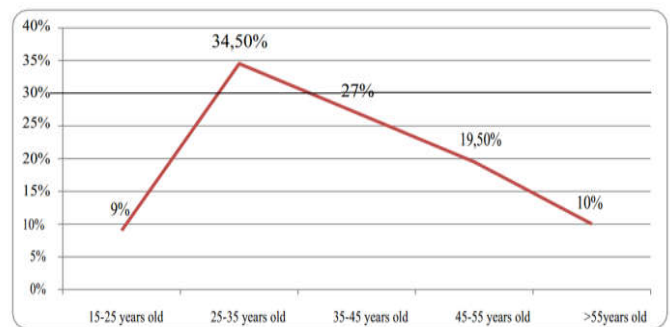


Figure 11. Vaccine booster rate by age

Prevalence of vaccination in patients with and without chronic pathologies: Among the 200 patients included in our study, 22% suffer from a chronic pathology, i.e. 44 patients out of 200, among which 41% (18/44) of the patients made their booster vaccination against 59% (26/44) without booster

vaccine. Figure 12 shows the rate of vaccinated patients according to their general condition.

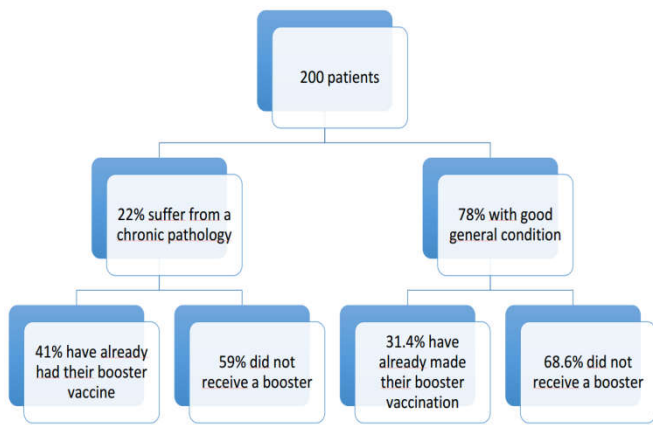


Figure 12. Rate of vaccinated patients by general condition

From, it can be deduced that whatever the pathology from which the patients suffer, practically the majority are unvaccinated, even if the difference between the vaccinated and the unvaccinated is not significant.

Knowledge rate on the severity of vaccine-preventable diseases: According to the patients interviewed, tuberculosis (97%), viral hepatitis B (91%), whooping cough (78.5%), tetanus (68.5%), and diphtheria (67.5%), are considered serious diseases. Diseases are considered mild like influenza (71%), while diseases like diphtheria and tetanus remain ignored by 31% and 27% respectively (Figure 13).

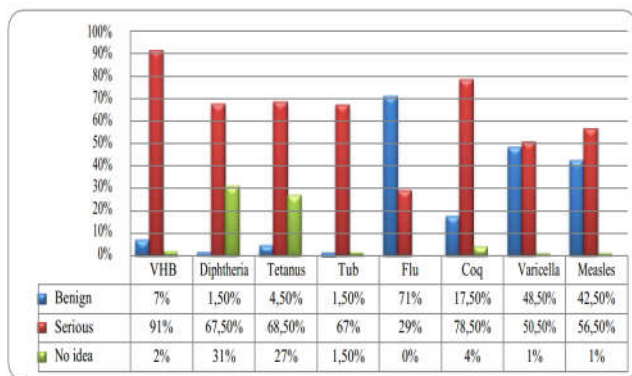


Figure 13. Knowledge rate on the severity of vaccine-preventable diseases

The rate of patients with an idea on preventable diseases is 45.5%, the diseases often cited are: measles, chickenpox, and influenza.

Knowledge about tetanus

Knowledge rate on tetanus disease and its vaccination: Among the 200 patients included in our study, 33.5% are aware of tetanus disease or have already heard of it, yet only 26.5% of them had an idea about the existence of a tetanus vaccine. But the majority ignore the existence of the disease and its vaccination as shown in Figure 14.

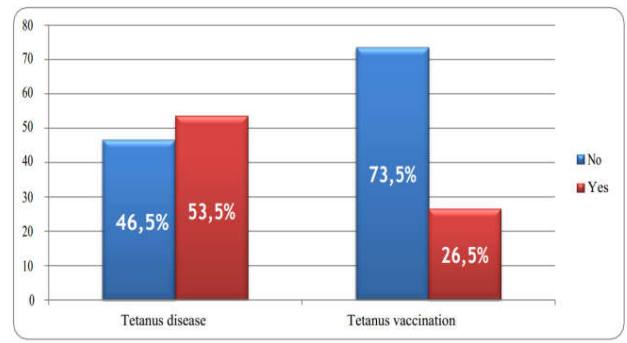


Figure 14. Knowledge rate on tetanus disease and its vaccination.

Tetanus vaccination rate: Among the population studied, only 26.5% are vaccinated against tetanus, of which 45% are women and 55% are men, against 73.5% of unvaccinated patients (Figure 15).

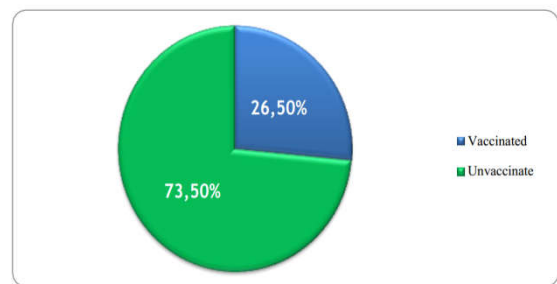


Figure 15. Tetanus vaccination rate in the study population

Among the vaccinated patients, who represent 53 patients out of 200, 18 patients (34%) belong to the age group between 25 and 35 years, while 11 patients (21%) are aged between 15 and 25 years, 10 between 35 and 45 years (19%), 9 between 45 and 55 years (17%), and only 5 patients (9%) aged over 55 years (Figure 16)

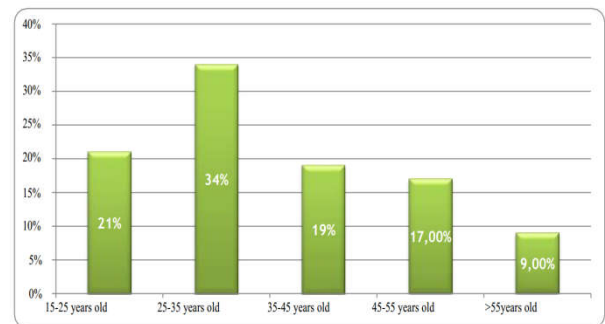


Figure 16. Tetanus vaccination rate by age group

Knowledge about the severity of tetanus disease: Figure 17 shows the level of knowledge about the severity of tetanus disease. According to the patients in the study population, more than half of the patients (56.5%, n = 113), have no idea about the level of severity of this disease, while 26% of the patients think that the disease is serious only for the affected person and 17.5% think that the disease is serious for the affected person and those around them.

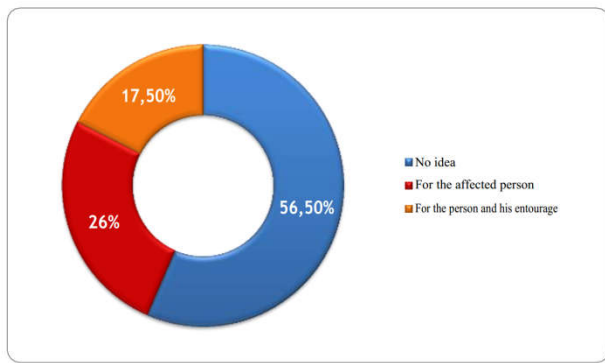


Figure 17. Knowledge about the severity of tetanus disease

Knowledge on the modes of transmission of tetanus according to the patients: According to patients' knowledge of the modes of transmission of tetanus, 73.5% (n = 147) have no idea about the mode of transmission of tetanus disease, and 11% (n = 22) say it there is no human-to-human transmission, and only 1% believe that tetanus can be transmitted during childbirth (Figure 18).

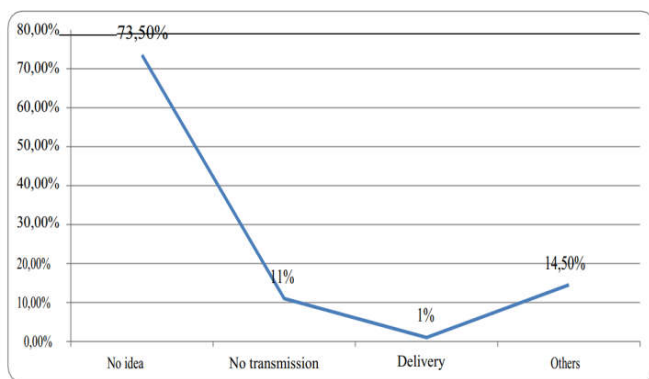


Figure 18. Knowledge about the modes of transmission of tetanus according to the patients

Patient feedback on the effectiveness of the tetanus vaccine: As shown in Figure 19, 66% (n = 130) think the tetanus vaccine is very effective in preventing tetanus disease, and only 6% (n = 12) doubt its effectiveness, while 28% do not know.

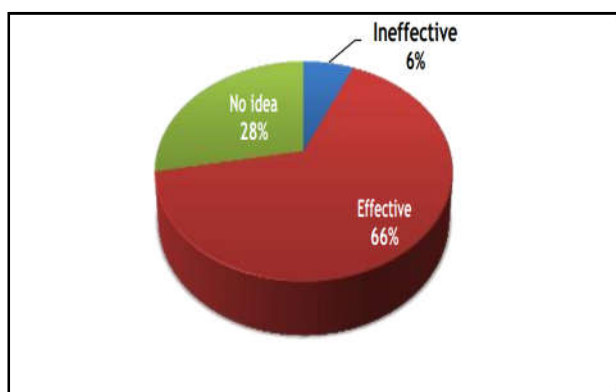


Figure 19: Patient feedback on the effectiveness of the tetanus vaccine

Distribution of patients by number of consultations: From Figure 20, we can deduce that 58.5% of patients have already consulted in other dental centers compared to 41.5% who did not consult a doctor before their consultation at the center. For

the majority of patients who have never consulted in other dental centers (56.6%), it was their first consultation at the center, while 43.3% already have their records and consult for years in the same center. Even though the majority have already consulted a dentist, whether private or public, no one (0%) was informed about the importance of tetanus vaccination before getting dental care.

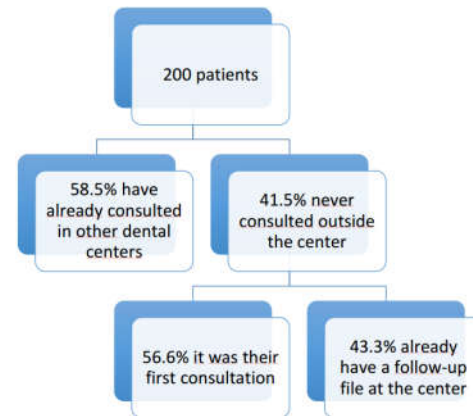


Figure 20. Distribution of patients by number of consultations in the center and previous consultations

RELUCTANCE TO VACCINATION

Reluctance to vaccination: The reluctance rate for vaccination is very low (9%), compared to non-reluctant patients who have no problem with vaccination (91%).

Reasons for reluctance to vaccination according to patients: Among the 18 patients (9%) reluctant to vaccination, and according to, we note that the majority of patients have a phobia and a fear of syringes called Belonephobia (39%), 28% are afraid of vaccine-related side effects, 22% do not like being vaccinated, and 11% prefer to avoid the pain of the vaccination procedure.

Knowledge rate of compulsory vaccines in Morocco: About 94% of the patients questioned did not know the compulsory vaccines in Morocco, and only 6% had an idea about some vaccines, in particular vaccines against influenza, measles, chickenpox ... etc.

DISCUSSION

Characteristics of the study population

Distribution of patients by gender: Our results show a predominance of the female sex with a percentage of 60.5% (Figure 1), which shows that women attend dental services more than men. Our results are confirmed by other studies including a study done in Quebec between 2013 and 2014, which showed that overall, women are more likely than men to consult dental specialists (Professionnels). Another survey carried out in France between December 2013 and May 2014, on 5,294 people aged between 15 and 75, the proportion of French people having consulted a dental surgeon at least once during the last 12 months of the study according to the sex, was 63.7%, of which 69.1% were women and 58% were men. (Statista Consultation, 2014).

Distribution of patients according to age groups: According to Dr. Jerrar and according to a national epidemiological survey in Morocco, carried out in 1999, dental caries affects 82.5% of adolescents aged 15 and 97.7% of adults between 35 and 44, which joins our study which showed a predominance of the age group 15 and 45 years of the consulting patients in the service (La Nouvelle, 2012). The high prevalence of oral diseases in the Moroccan population is due to several factors, namely: diet, lack and / or absence of dental hygiene, lack of interest in oral health, "insufficient information and education in the field of oral health, the difficulty of access to care, the absence of medical cover for the great majority of the population, the limited income prevents the recourse to dental care (La Nouvelle, 2012). It is important to have healthy dentition in perfect condition at every stage of life as it is necessary for all essential human functions. Teeth and oral tissues are exposed throughout life to many environmental factors that can cause disease or even tooth loss. So from an early age, a visit to the dentist at least once a year is recommended, but certain pivotal periods are particularly important. At the age of 15, it is essential to spot cavities as soon as possible, because the teeth have become permanent and must be in perfect condition. With age, the salivary glands make less saliva, and the risk of disease can be increased by dry mouth due to limited saliva production. Regular check-ups can help maintain a healthy mouth and a good quality of life, according to regular monitoring of one to two visits per year to the dentist and sometimes more, depending on the oral condition of the person (L'enjeu des maladies, 2015)

Distribution of patients according to their level of study: About 22% of the patients surveyed are not in school, the vast majority of whom are women (19%) compared to 3% of illiterate men. Several studies confirm that the illiteracy rate has dropped by two thirds over half a century, going from 9 people out of 10 to 3 people out of 10 specifies the High Commission for Planning, with a rate of women higher than that of men (Aujourd'hui Le Maroc). The results show that only 15.5% of patients have a higher level qualification (Figure 8), this criterion poses a serious problem concerning the lack of knowledge by patients of certain pathologies and certain terms, which makes communication difficult. with patients, and gathering information, because it takes more time for each patient.

The level of study and the level of information are closely linked, since having or understanding information requires a significant degree of precision, and a development of health education through relays (school, university, company), in order to allow the patient to take ownership of their daily behavior, and according to a study carried out on patient satisfaction with their level of information, and according to the survey carried out for the High Authority for Health, 66% estimate that the information helped them to improve the management of their health (Memoire Online). According to a study carried out between September 2012 and July 2016, in asthmatic patients followed in the pneumology department from August 20, 46.5% of the patients were illiterate or of primary education level (G1), and 53.5% had a secondary or higher education level (G2). Asthma was controlled in 38% of patients (G1) vs 63% of patients (G2). So the level of education significantly influences the control of the disease and this probably for many factors such as easier access to information (Jabri, 2018).

Distribution of chronic pathologies according to age: About 22% of the patients participating in this study suffer from a chronic pathology, especially among those aged between 35 and 55 years, which is explained by the fact that the risk of occurrence of chronic pathologies increases with age, the diabetes for example. Patients with cardiovascular diseases are often called upon to consult the dental office and undergo treatments which may have an impact on their general health, and the management of these patients at risk requires the dentist to be familiar with the patient's state of health, in order to prevent the risks that may be incurred by these patients, since the management of a patient with a chronic pathology must primarily aim not to unbalance his general condition. But according to a study on the oral health of the French conducted in 2018, almost half of the French (59%) do not know the link between oral health and overall health, and this lack of knowledge can have important consequences, in particular for people with diabetes or cardiovascular disease, or for pregnant women, yet this relationship is already demonstrated, since a disturbed oral state is likely to have repercussions on cardiovascular, endocrine disorders (diabetes), pulmonary, renal, and dermatological (Ladivisiondel' informationetdela Communication, 2014)

In the case of a patient at risk and with specific needs, measures must be taken. For patients suffering from heart disease, their management requires collaboration with the cardiologist in order to prevent risks and which may be of the infectious or hemorrhagic type. For patients suffering from renal insufficiency, the risk of bleeding must be prevented and especially in hemodialysis patients in relation to the timing of the intervention, hence the importance of the interview. And for the diabetic, the odontological management, aims mainly not to unbalance the diabetes (Ladivisiondel' informationetdela Communication, 2014).

Patient knowledge of vaccines and vaccine preventable diseases

Vaccination coverage in Morocco: Vaccination coverage is the proportion of people vaccinated in a population at a given time, its knowledge and its monitoring over time make it possible to know if a vaccination program is correctly applied. It is expressed by the ratio between the number of people actually vaccinated with a vaccine in a population and the total number of people who should be vaccinated in that same population (Guthmann, 2012). A person considered to be covered by a vaccine is one who has received at a given age the number of doses of vaccine recommended at that age. In France, for example, the evaluation of vaccination coverage is regular and adapts to changes in vaccination recommendations, revised each year by the High Council for Public Health (HSP) and published in the Weekly Epidemiological Bulletin (BEH), once adopted by the ministry responsible for health (Guthmann, 2012) The vaccination coverage targets set by public health law (at least 95% for all vaccinations, except influenza: 75%) were not achieved for most vaccinations for which vaccination coverage data were available (Guthmann, 2012).

National Immunization Program (NIP) in Morocco: In Morocco the National Immunization Program (NIP) is a priority maternal and child health program (MCH), its main purpose is to encourage vaccination, to facilitate access to it, and to improve the monitoring and evaluation of vaccination

coverage, with a role in reducing mortality and morbidity through vaccination of diseases. The objective of this program is to achieve and maintain a uniform vaccination coverage greater than or equal to 95% at all levels, as well as to eliminate several diseases such as tetanus and in particular neonatal tetanus (Ministere, 2013).

Possession of health and / or vaccination book: The vaccination book is a book in which are recorded all the vaccinations of a person. In this booklet we find: the name of the vaccine, the date of the injection, the number of the manufacturing batch, the date of the next vaccine to be made, as well as the name and signature of the vaccinator. Thanks to the health book, general practitioners and health professionals can check if the compulsory or recommended vaccines have been made and if reminders are necessary (Comite Editorial Pedagogique, 2011). This booklet is very practical, it allows you to know the vaccinations received and if the person is up to date with their vaccinations, so do not forget to present it to the health professional, it is a document valid for life. For children, the health record also serves as a vaccination record, which replaces the health record as an adult (Comite Editorial Pedagogique, 2011).

Despite the importance of this booklet, our study shows that 53% of the patients questioned do not have any vaccine documents, and are not aware of its precious value because of the information it contains and its role in traceability. A study was carried out in 2016 by the team of the immunology laboratory of the FMPC, in the same context but among the health staff of the CHU IBN ROCHD Casablanca, and the Pasteur Institute, a rate of 49.1% of participants in this study do not have a vaccine document, knowing that they are aware of its importance (Jaouad, 2016). An electronic vaccination record (EVR) is available on the mesvaccins.net website, it has been developed by a Group of Preventology Studies (GPS) since 2011, which is a non-profit association, independent of pharmaceutical companies. The CVE is authorized by the French National Commission for Information Technology and Liberties (CNIL), and is hosted by a company licensed to host health data. Each individual can create their CVE for free and decide whether or not to share it with one or more healthcare professionals. The expert system allows, depending on age, sex, state of health, living or working conditions, and the environment, to indicate to the patient the recommended vaccinations and to establish a precise monitoring of the vaccination status, therefore it proposes an individualization of the recommendations. The patient will receive email alerts with vaccine reminders to perform. Only a healthcare professional, identified by their CPS card, can validate a CVE if access has been authorized by the patient. The possible sharing of data between health professionals is a significant time saver, a doctor will be able to validate in one click the administration of a vaccine delivered by a pharmacist. This tool is unfortunately little known to the profession in France. Discussions are envisaged with the Health Insurance for a generalization of the CVE and a management of the subscription which could constitute an obstacle to its development (David, 2016).

Rate of vaccinated patients: The vaccination booster is necessary for strengthen the immunity conferred by vaccines, because over time, the level of antibodies present in the body decreases. Respecting the vaccination schedule, by carrying out the reminders is not important that for children, adults also

must respect it, especially since it is possible at any time to update the vaccinations. It also means that even if you missed a booster, you just need to go back to the regimen and complete the injections (Pediatrie). Despite the importance of booster vaccines, most do not consider them to be important enough, the majority of adult patients participating in this study, considers the compulsory vaccines administered to children only to be beneficial, on the other hand, booster packs are not as important or even not necessary, thus 66.5% of the patients questioned have never made a vaccine booster, on the other hand the patients who have already made at least one booster represent 33.5%, the majority of whom are women since they must put update certain vaccines before pregnancy, these results are worrying since certain diseases like tetanus necessarily require a booster every ten years in order to be protected against this disease. We can note in this sense, a certain lack of information, or lack of interest on the part of the interviewees, since most of them do not even know what was the nature of their last vaccine, especially if it is a medical initiative (family doctor, school doctor, labor doctor or the army), and it seems clearly that the patients are less well informed as to the seriousness of the non vaccination and the non respect for vaccine boosters, and this ignorance may partially explain the neglect of boosters observed in our study.

Some people are more fragile than others due to their state of health, immunosuppression, diabetes, blood disease or others. In these people, certain infectious diseases are more frequent and can also be more serious, and to protect them, vaccination is particularly recommended for these people, tolerance to vaccination is in principle good in patients with a chronic disease such than those mentioned above, the side effects are neither more frequent nor more severe, and are not associated with a worsening of the basic disease (Vaccination). Despite the importance of vaccination in patients suffering from chronic pathologies, our study shows that only 18 of the 44 patients are vaccinated, and who have made a few booster shots. This suggests that patients with chronic diseases are not aware of the importance of vaccination, and most of them have never been made aware of the risks and dangers of non-vaccination as well as frailty. of their condition in the face of infectious diseases.

Knowledge about tetanus

Knowledge rate on tetanus disease and its vaccination: Tetanus is an infectious disease contracted by the infection of a wound or injury by spores of the *Clostridium tetani* bacteria in a non or poorly immunized individual, the disease cannot be transmitted from person to person. other, and anyone can get tetanus (Bougataya, 2004). Tetanus has become very rare in industrialized countries according to the World Health Organization (WHO), but remains common in many developing countries, which is confirmed by our study seen that only 33.5% of patients questioned know tetanus disease, and only 26.5% have an idea about the existence of the tetanus vaccine, yet tetanus constitutes a medical emergency which requires knowledge of the disease and especially of its symptoms, as well as vaccine protection respecting the vaccination schedule. In France, between 2009 and 2014, there were between 8 and 14 cases of tetanus declared per year, which corresponds to an incidence of 0.06 to 0.22 cases per million inhabitants. For the other developed countries, the number of tetanus cases is similar to the French figures (Institut De Veille Sanitaire) In Morocco, the number of

annual tetanus cases is between 12 and 40 cases. The figures have been decreasing since 2011, but this could be due to the systematic non-reporting of tetanus cases and not to the generalization of vaccine boosters (Benjira, 2016).

Incidence of tetanus by age and sex: During the decade 2000-2009, the Institute for Health Surveillance (InVS) recorded 175 new cases of tetanus, of which 128 cases were reported in female subjects, representing a sex ratio of 0.37. According to the latest data from the Weekly Epidemiological Bulletin (BEH), between 2008 and 2011, 36 cases of tetanus were reported, including 27 cases in female subjects. (19). In France and Poland, we note that respectively 75% and 64% of people with tetanus were women. Italy also noted a predominance of women (20). According to a study carried out between 2009 and 2014 on severe tetanus in intensive care at the Hassan II teaching hospital in Fez, and on 20 cases, it has been shown that men are more exposed to tetanus than women, with a sex ratio of 5, 6, this distribution is almost identical to that obtained at the Cotonou University Hospital in Benin in the Hounpké study published in 2014 with a sex ratio of 3.6. In Brazil, according to the study by Paula do Patrocínio (2014), men were five times more affected than women (20). Analysis of these data shows that in developed countries, there is a predominance of women, unlike underdeveloped countries where men are more exposed to tetanus than women, and this could be explained by manual occupations at risk than exercise men in underdeveloped countries, and compulsory vaccination that men receive during their military service in developed countries. According to a study carried out between 2009 and 2014 by Dr. Benjira Rim, on severe tetanus in intensive care at the Hassan II teaching hospital in Fez, tetanus seems to be a disease of young adults since 65% of patients are under 60 years of age. In contrast, in Poland, in the Zieliń study published in 2013, 65% of patients who had tetanus between 2009 and 2013 were over the age of 60. As in France, tetanus mainly affects the highest age groups of the population since 86% of patients were over 70 years old, according to a study carried out between 2008 and 2011 in subjects not or poorly vaccinated (Benjira, 2016)

Tetanus vaccination rate: Only the tetanus vaccination constitutes an effective means of prevention against tetanus. The vaccine has been available since 1938, and has been part of the compulsory vaccines in France since 1952 for the primary vaccination of infants before the age of 18 months. There is no contraindication to this vaccine, it is almost perfect in efficacy and safety with a protection threshold of 10 mIU / mL (Lankar, 2017). Patients' tetanus immunization is assessed by interview, which may be an unreliable source, especially in the elderly who are most affected by tetanus, as they are less vaccinated and respond less well to vaccination. This particularly at risk population should benefit from close monitoring of their vaccination status, but unfortunately our study shows the opposite, with only 9% of patients over the age of 55 being vaccinated against tetanus, however 55% of vaccinated patients are aged 15 to 35. In the United States, epidemiological data show a significant decrease in the incidence of tetanus, in France the incidence of tetanus has also decreased over the past 20 years without ever becoming zero, and in Western Europe, only the Italy keeps a higher incidence than France, and it is thanks to the tetanus vaccination and the respect of the vaccination calendar in particular the booster vaccines that these countries were able to reach their objective (Lankar, 2017). In France in 2002, during

a survey carried out on a general population, 88.5% of the adults questioned declared having been vaccinated in their life, but only 62% of the people surveyed were up to date with their vaccination having received the last reminder against tetanus for less than 10 years. More recent data, but only for one region and obtained from the elderly, showed that 77% of people between 60 and 97 years of age were up to date with their tetanus vaccination (Antona, 2012).

According to the BEH, tetanus in France between 2008 and 2011, and for 21 patients (58.3%) the vaccination status was unknown. Of the 15 patients for whom vaccine status could be documented, 14 were unvaccinated and only 1 patient, 59, would have received a full vaccination, however, the last recall was 35 years ago (Antona, 2012). Our study shows that only 26.5% of patients in the study population who are vaccinated against tetanus, and 73.5% of patients are not, which can be explained by the non-observance of the vaccination schedule and vaccine reminders, following the lack of awareness, and knowledge as well as the level of education of the patients. After a complete basic vaccination, booster vaccinations are recommended at intervals of 10 years without age limit, more frequent booster vaccinations increase the risk of side effects which can be in the form of redness, induration and pain in the injection site, but disappear quickly and generally do not require treatment, occasionally a temperature boost may be associated (Vaccination antitétanique, 2013). It is important to note that tetanus vaccination does not confer group immunity against the disease. Only individual vaccination therefore provides protection (Vaccination antitétanique, 2013)

Severity of tetanus disease: Tetanus is a rare disease today thanks to compulsory vaccination, but remains a curable fatal disease only in specialized intensive care settings. In 1966, the World Health Organization (WHO) estimated that 164,000 people die from tetanus each year worldwide. In France, where the disease is notifiable, in 2000 and out of around thirty cases, nine French patients had died. In 2002, the WHO estimated that the total number of tetanus-related deaths worldwide was 213,000, of which approximately 180,000 were due to neonatal tetanus, which in 2005 caused 215,000 deaths worldwide. In December 2017, this maternal and neonatal tetanus remains a public health problem in 15 developing countries (Planetoscope).

Tetanus is a so-called resuscitative pathology, which has no etiological treatment and which requires long and difficult resuscitation, yet 56.5% of patients participating in the survey have no idea about the severity of tetanus disease, against 26% who think that the disease is serious only for the person affected, and 17.5% consider the disease serious for the person affected and those around him. Mortality remains high, given that patients' knowledge of the level of severity of the disease is still insufficient to achieve the objective and eliminate the disease through vaccination and protection, hence the importance of strengthening programs tetanus vaccination and awareness raising. To assess the severity of tetanus disease, the work of VAKIL and Coll proposed during the 4th international conference on tetanus at DAKAR, a score called "DAKAR score", which allows to classify tetanus in 7 classes of 0 to 6, using 6 elements marked 0 or 1 depending on their presence or absence (Benjira, 2016).

The overall score gives an idea of the severity of the disease with 3 groups:

- Group I: - Score 0-1; rough forms
- Group II: - Score 2-3; medium forms
- Group III: -Score 4; severe forms
-Score 5-6; very severe forms

Knowledge of the modes of transmission of tetanus according to the patients interviewed: The tetanus bacteria are widespread in the environment, and can live for years in soil, dust, in the intestines of herbivores and in their droppings. The disease does not get caught just by touching an infected object, the skin must have a small sore, scrape or scrape before the bacteria can enter the body. A contaminated wound can therefore allow the bacteria to grow, and once the bacteria enters the body following a cut with a contaminated or rusted object, an unsterilized needle stick, leg ulcer, umbilical cord of the newborn especially in developing countries, it enters the body, and will then pass into the blood and attack the nervous system (Québec). The mode of contamination is different than in a developing or industrialized country. In industrialized countries, injuries are the most frequent portal of entry, they are often accidental and superficial wounds linked to domestic activities or gardening, and in exceptional cases, the portal of entry is postoperative or secondary. to an intramuscular injection (Benjira, 2016). In developing countries, ignorance of the basic rules of asepsis is present in the majority of tetanus cases occurring in Africa: (David, 2000).

- Traumatic and accidental inoculations, especially wounds of the feet often neglected or treated according to custom (telluric plasters or based on plants).
- Traditional practices (ear piercing, scarification, tattoo)
- The gynecological entrance door (deliveries, abortions) is very common.
- Post-operative surgical tetanus is, contrary to popular belief, exceptional in Africa.
- Medicated intramuscular injections can cause tetanus.

The circumstances of the injury may be (Benjira, 2016)

- Injury by contaminated equipment
- Fall with soiled wound
- Cat scratch
- Rat bite

Intravenous drug users are a risk group that should not be overlooked, representing in the United States almost 15% of tetanus patients (Benjira, 2016). Tetanus is therefore not spread from person to person, and most are unaware of this. According to our study, the results show that only 11% of patients confirm that tetanus disease is noncommunicable, compared to 73.5% who have no idea how tetanus is transmitted, while 14.5% who think that tetanus can be transmitted from human to human by various means, including: blood, breathing, contact... etc., and only 1% of the patients questioned know neonatal tetanus, hence the importance of information of the general population on the risk of tetanus disease, as well as its severity.

Patient knowledge of the efficacy of the tetanus vaccine: The highly effective tetanus vaccine was discovered by French microbiologist Gaston Ramon in 1924. Because of the lack of

natural immunity, vaccination is the only way to prevent the disease. It is done by the administration of tetanus toxin inactivated by treatment with formaldehyde (tetanus toxoid), then purified and usually adsorbed. The immunogenicity of this product, expressed in International Units (IU), is sometimes reinforced by the addition of an adjuvant aluminum hydroxide. A complete vaccination provides total and effective protection against tetanus (VACCINFO). Since July 2018, the only vaccine composed entirely of tetanus toxoid (TETANIC PASTEUR VACCINE) has no longer been marketed in France. For the vaccination of infants, the tetanus vaccine is combined with vaccines against diphtheria, polio, whooping cough and Haemophilus influenzae infections, or even against hepatitis B. For reminders in children and adults, the tetanus vaccine is associated with vaccines against diphtheria and polio (DTP), even against whooping cough (DTPP) (Eurekasante). Among the undesirable effects that the vaccine presents, one can notice redness, induration and temporary pain at the injection site, and occasionally a temperature increase can be associated with it, on the other hand there are no contraindications for this vaccine (VACCINFO). The principle of tetanus vaccination is based on the injection of tetanus toxoid which is none other than tetanospasmine modified by heat and formalin. Immunity is not immediate, it only appears after the second vaccination injection. It will be durable and solid if properly maintained by booster injections.

It therefore requires on the one hand several initial injections, to give rise to the immune response and which is called the primary vaccination and on the other hand, booster injections throughout the life to maintain this acquired immunity (Villaume, 2012). For children as for adults, the vaccine is effective, and in adults, a booster every ten years is enough, the effectiveness of the vaccine remains indisputable. In our study, patients participating in the survey are aware of the efficacy of this vaccine, since 66% of patients considered the vaccine to be very effective, and only 6% doubted its efficacy, including the other vaccines. Furthermore, 28% of the patients questioned have no idea about the effectiveness of this vaccine.

Link between the risk of infection (Tetanus) and the increase in the number of consultations

Dental care is essential to keep teeth healthy, there are many, each responds to a specific situation:

- Control and diagnostic consultations
- Descaling
- Treatment of the gums
- Treatment of caries
- Laying of crowns and bridges
- Installation of removable devices (Dentasmile)

The consultation can be done in private centers, as it can be done in public centers, according to our study 58.5% of patients have already consulted in other private and public centers, and 38% of the patients questioned consult regularly in the center at the level of the dental consultation and emergency service. In dental offices and centers, infections can be transmitted either directly by "contaminated dental materials, blood, saliva.", Or indirectly" Instruments, Equipment surfaces, Surrounding surfaces ". Tetanus is like any other infectious disease can be contracted at the level of a health care service, and is one of the most serious or even fatal

infections, a vaccination booster every 10 years is necessary to avoid this disease. The germ responsible for tetanus is very resistant, it is present in a generalized way in the environment. In the dental care environment, a dental lesion can constitute a gateway for this germ, and following the use of soiled or poorly sterilized equipment, as well as the use of contaminated products, the patient can contract the tetanus disease in case it is unvaccinated. According to our study carried out at the Center for Consultations and Dental Treatments (CCTD) in the emergency department, and among the 200 patients participating in the survey, no one was informed of the risk of transmission of tetanus, nor the consulting patients in this center only, nor in other private or public centers, which explains the ignorance of the importance of the booster tetanus vaccine especially before getting dental care.

Reluctance to vaccination by the population studied

It is well known that vaccination is an important public health intervention to improve the state of health of the world population, but unfortunately the reluctance remains increasing vis-à-vis vaccination, which means delaying acceptance of vaccination or refuse it even if the services are available. According to our study 9% of patients are reluctant to vaccination against 91% who have no problem with vaccination and who on the contrary consider it important for the prevention against several diseases (Futura). In 2010, 61% of French people had a favorable opinion about vaccines, against 90% five years earlier. However, confidence is gaining ground with 79% of favorable opinions in 2014 according to comparable surveys conducted by the National Institute for Prevention and Education for Health (Inpes), but distrust persists among some people who criticize the efficacy and safety of these products (Inserm). According to a study carried out in France in September 2018, using a questionnaire disseminated by internet and via social networks to all pharmacies in pharmacies in Morocco, the majority of pharmacists think that patients' fears about of vaccination are rather related to an information problem: either a total lack of information (56%), or the content of the information relayed by the media (36.3%), the fear of the vaccination gesture in him - even is very unrepresentative (3.8%).

Several reasons are behind this reluctance, 39% of patients participating and reluctant to vaccination cited phobia and fear of needles, which is a widespread phenomenon in children as in adults, and which can have health consequences. Because it can lead a person to avoid injections, even those that are compulsory, to get vaccinated or inject a medicine. This phobia can be linked to several factors, including family or even personal history, following a traumatic experience during an injection (CHEO, 2018). 28% of the reluctant refuse to be vaccinated for fear of the undesirable effects that vaccination can cause, and even in France the side effects linked to vaccination is a subject of concern for 60% of French people. And like any drug, vaccines can cause side effects, which in most cases are minor and transient (fever, pain, redness at the injection site), however serious side effects are very rare and are the subject of follow-up and in-depth research when they occur. It is therefore important to understand that the risk of developing a disease by not vaccinating oneself is much greater than that of seeing an adverse effect linked to vaccination appear (LEEM, 2018). Fear of pain during the injection is one of the many reasons why people postpone or refuse vaccination, which can develop reluctance towards

vaccines and lead to lower vaccination rates, this phenomenon is best known in children, while even adults suffer from this fear, and according to our study 11% of the adult patients questioned justify the refusal of vaccination by fear of the pain caused by the latter. Yet 22% of reluctant patients responded with a simple "I do not like being vaccinated", and prefer to let their own immune system react against all types of aggression, and play its role as the body's natural defense mechanism against infections and diseases, and consider vaccines useless, are useless and do not protect.

Mandatory vaccines in Morocco

From January 1, 2018, the number of compulsory vaccines in France goes from 3 to 11, following the return of certain diseases in France, and which does not apply only to children born from this date. Morocco, is one of the pioneer countries which are committed to ensuring the child's right to vaccination, and following the progress made in the world in the development of vaccines, the Moroccan Ministry of Health also provides free of charge the availability of 11 antigens for the protection of the health of children under the age of 5, in all health facilities nationwide to prevent PNI target diseases. (Ministere De, 2014). It is therefore advisable to follow the national vaccination calendar, and respect the different vaccination dates recommended by the Ministry of Health, to ensure optimal protection of children against the various target diseases. According to our study, 94% of the patients questioned have no idea about the compulsory vaccines in Morocco, and they don't even know what vaccines they have been vaccinated for, and only 6% have an idea about some vaccines or vaccine-preventable diseases. Women had less difficulty than men in citing a vaccine or a disease against which it is possible to be vaccinated. The majority of patients think that it is difficult to have all the necessary information on vaccines, because the sources of information remain inaccessible especially for illiterate patients who do not use all types of media to obtain information, where the considerable effort to be made to alleviate this problem among the general population.

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