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THE BENEFIT OF MEDICAL THESIS

THESE

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PY

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TO OBTAIN A MEDICAL DOCTORATE

KEY WORDS :

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Medical students in morocco

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LIST OF ABBREVIATIONS

DES	:	the diploma of specialized studies
DESC	:	Diplôme d'études Spécialisées Complémentaires / Complementary Specialized Diploma
FMPF	:	faculté de médecine et de pharmacie de fes/ Faculty of medicine and pharmacy of Fez
MBBS/MBChB/BMBS:		Bachelor of Medicine, Bachelor of Surgery
MD	:	Doctor of Medicine
MedScD :		medical science source of information
MS	:	medical students
OMS	:	Organisation mondiale de la santé/World Health Organization

I. INTRODUCTION

Medical students have to prepare thesis for academic purposes in the final year of their studies to become a medical doctor (1).

A significant number of Medical students have to produce this work without understanding the true benefits, the reasoning of their thesis or how to select a topic according to their needs and that is suitable to write.

Additionally they have to demonstrate good teamwork and collaboration with their thesis supervisor without a lecture or a course to learn how to make a successful work and the steps to be taken in order to publish their completed thesis.

This poses to us interesting questions regarding the following:

- To what extent will the medical student experience a benefit during their thesis work?
- And if so do students comprehend the benefit of their medical thesis themselves?
- Why medical students are not publishing their completed research?

The objectives of this thesis you are reading is to research the previous published thesis from Faculty of medicine and pharmacy of Fez (FMPF), to highlight the benefits of a medical thesis and the difficulties that medical students are facing during their thesis research

As a result we aim to provide suitable solutions and guidance for future medical students in order that they may be able to more easily produce thesis to a high degree of quality.

A. Generality of the medical thesis

1-Scientific thesis

Thesis /'θi:sis/n is defined as a proposition to be maintained or proved via a dissertation by a candidate for a degree.

[Middle English via Late Latin from Greek = putting, placing, a proposition ,discussion etc.]

The term "thesis" comes from the Greek θέσις, meaning "something put forth", and refers to an intellectual proposition. "Dissertation" comes from the Latin *dissertātiō*, meaning "discussion"(2)

One might infer from the etymology above that a thesis is an (obligatory) offering placed at the desk of the examiner by a candidate who wishes to get a degree. It is the most common, and often only, reason why a thesis is written. But we cannot deny there are other reasons for writing a thesis.

A thesis is a written record of the work that has been undertaken by a candidate. It constitutes objective evidence of the author's knowledge and capabilities in their field of interest and is therefore a fair means to gauge them.

Although thesis writing may be viewed as an unpleasant obligation on the road to a degree, the discipline it induces does have lifelong benefits.

Most of all, a thesis is an attempt to communicate. Science begins with curiosity, followed on with experiment and analysis, and leads to findings which are then shared with the larger community of scientists and perhaps even the public. The thesis is therefore not merely a record of technical work, but is also an attempt to communicate it to a larger audience via publishing.

2-Medical thesis

Medicine is defined as "a scientific and academic discipline, with its own teaching content, research, levels of evidence, and practice." It is also a clinical specialty oriented towards primary care.

Primary Care: are accessible and integrated health care services provided by physicians who are responsible for meeting a large majority of individual health needs, maintaining a long-term relationship with their patients, and practicing in a supportive environment for families and the community (3). (According to the OMS and the Alma Alta Declaration 1978).

In France, since the creation in 2004 of the diploma of specialized studies (DES) of general medicine, this discipline has allowed to register more and more in the field of the scientific research. Thus, scientific production in general medicine is expected to develop strengthening in its field of competence and its credibility(3).

A student's thesis is a very important opportunity to produce knowledge in general medicine and to learn about scientific research.

A Doctor of Medicine (MD from Latin *Medicinae Doctor*) is a medical degree, the meaning of which varies between different jurisdictions. In some countries, the MD denotes a first professional graduate degree awarded upon initial graduation from medical school. In other

Countries the MD denotes an academic research doctorate, higher doctorate, honorary doctorate or advanced clinical coursework degree restricted to medical graduates. In those countries, the equivalent first professional degree is titled differently (for example, Bachelor of Medicine, Bachelor of Surgery in countries following the tradition of the United Kingdom)

(4).

The medical studies have many differences in the degree program as well as the clinical education duration between different countries:

Medical studies in Morocco:

Medical students must finish the thesis in order to receive a State Diploma of Doctor of Medicine (MD) or (diplôme d'Etat de docteur en médecine)

At the end of the degree they can work as a general practice doctor (GP) or they can pass a national ranking exam, which will determine their specialty, depending on the ranking(5).

Medical studies in Tunisia:

Medical school curriculum consists of seven years similar to Morocco, five years as an 'extern' and two years of internship or 'intern trainee

The residency program consists of four to five years in the specialty the medical student qualifies, depending on his score in the national residency examination under the rule of highest score chooses first. Whether the student chooses to be a family doctor or a specialist, he has to make a doctorate thesis, which he will be defending in front of a jury, after which he gains his degree of Doctor of Medicine (MD) (6).

Medical studies in Sudan

Medical school is a faculty of a university. Medical school is usually 6 years, and by the end of the 6 years the students acquire a bachelor's degree of Medicine and

Surgery. Post graduating there is a mandatory one-year full-time internship at one of the university or Government Teaching hospitals (6).

Medical studies in France are organised as follows:

Towards the end of the French medical program medical students are provided with more responsibilities and are required to produce a thesis. However unlike a PhD thesis, no original research is actually necessary to write an MD thesis. At the conclusion of the thesis

French medical students receive a State Diploma of Doctor of Medicine (MD) or *diplôme d'Etat de docteur en médecine*. Every new doctor must then proceed to a Diploma of Specialised Studies (*Diplôme d'Etudes Spécialisées* or DES) to mark their specialty. Some students may also receive a Diploma of Complementary Specialized Studies (*Diplôme d'études Spécialisées Complémentaires* or DESC)

In the united kingdom, Ireland and various Commonwealth countries:

The Doctor of Medicine is a postgraduate research degree in medicine. At some universities, this takes the form of a first doctorate, analogous to the PhD, awarded upon submission of a thesis and a successful viva. The thesis may consist of new research undertaken on a full or part-time basis with much less supervision (in the UK) than for a PhD.

In order to be eligible to apply for an MD degree from a UK or Commonwealth University one must hold either a "Bachelor of Medicine, Bachelor of Surgery" degree, or an equivalent US

MD degree and must usually have at least five years of postgraduate experience. Therefore, graduates from the MBBS/MChB/BMBS degrees do not hold doctorates. However physicians holding these degrees are referred to as doctor as they are fully licensed as medical practitioners. In some commonwealth nations, these interns are designated as "house officers".

At some other universities (especially older institutions, such as Oxford, Dublin, Cambridge and St Andrews) the MD is a higher doctorate (similar to a DSc) awarded upon submission of a portfolio of published work representing a substantial contribution to medical research.

The University of Cambridge is proposing to introduce a new degree of MedScD (more akin to the ScD degree) awarded on the basis of a career's contribution to the

science or art of medicine, rather than a thesis, for which a candidate may be awarded the MD degree (6).

In Germany:

In the case where the Doctor of Medicine is awarded (either as a first or higher doctorate) for previously published research, the candidate is usually required to be either a graduate or a full-time member of staff, of several years' standing of the university in question.

After at least six years of medical school, the students graduate with a final federal medical exam (DritterAbschnitt der ärztlichenPrüfung). Graduates receive their license to practice medicine and the professional title of physician (Arzt). About 80% of them additionally obtain the academic MD-like degree Doctor of Medicine. The corresponding "doctoral" dissertations are often written alongside undergraduate study and are comparable to a master's thesis in science but students are only allowed to finish the dissertation process after their studies.

Obtaining the title is a practical necessity because many ordinary people incorrectly assume that only a doctor is allowed to practice medicine (6).

3-The benefit of the medical thesis

A medical thesis is the written work resulting from an original research in the field of Medicine, Nursing, Pharmacy, and other health and life sciences. It is submitted by the students in order to obtain a higher degree from the University.

There are many reasons why scientific research is important in medicine. Having a medical thesis is one of the medical research that medical students start with and helps them to build knowledge and further their medical skills and career. Research is required not just for students and academics but for all professionals. It is also important for budding and veteran writers. Among scientific professionals and

researchers, finding an interesting topic to discuss and to write about should go beyond personal experience. Determining either what the general public may want to know about or what researchers want others to realize or to think about can serve as a reason to do research. Undoubtedly importance of both scientific and non-scientific research it is crucial to finding possible cures for diseases and how to prevent them as well as commercial applications (7). Thus, research becomes a must to ascertain if one's ideas are supported by previous studies or if these ideas still need proof to be considered as evidenced knowledge. Indeed, research is instrumental in building and improving knowledge, as well as in facilitating learning. Research entails both reading and writing. These two literacy functions help enable computation and comprehension. Without these skills, it is less likely for anyone to appreciate and get involved in research. Reading opens the mind to a vast horizon of knowledge, while writing helps a reader use their own perspective and transform this into a more concrete idea that they understand (7).

They can also facilitate the critical thinking process. Listening to experts discuss the merits of their studies helps the listener to analyse a certain issue and write about such analysis.

With the wide array of ideas available, scholars and non-scholars involved in research are able to share information with a larger audience. Some view this process as ego boosting, while others see it as a means to stimulate interest and encourage further studies about certain issues or situations.

B.The previous research of FMPF:

During the year 2012 a research thesis was conducted with the aim to assess the methodology of thesis presented to the Faculty of Medicine in Fez in 2008. They developed an evaluation table containing questions on the different sections of the IMRAD (introduction, methodology, result, discussion) structure on which these thesis were based and they estimated the proportion of thesis that conformed to each criterion. There were 160 thesis on various specialties presented in 2008. The majority of the thesis (79.3%) were case series. Research questions were clearly expressed in 62.0% but the primary objectives were pertinent in only 52.0%. This study shows that there were important deficiencies in the methodological rigor of the thesis and very little representation of the thesis in publications (8).

In the conclusion of this research we found out that the methodology has not been structured, as such we have to ask is this because the pre-graduated medical students are not following the right methodology and structure? And also we have to ask what will be the final application of the Medical thesis? We will try to develop and answer those questions.

I. MATERIAL **AND** **METHODOLOGY**

Goals and objectives:

The object of this thesis is to:

- Find the problems and issues that the pre-graduate medical students are facing during the preparation of their thesis.
- Learn from the previous work (difficulties, experiences and solutions)
- Clarify and underline the importance and the benefit of the doctoral thesis for the medical graduate.
- Outline in broad terms the information and the questions they need to know before selecting a thesis topic and starting work on their thesis.
- Give suggestions and solutions to achieve a higher quality of scientific research work.

Study design:

Medical thesis is the last step for the medical student (MS) to finish his first medical degree.

The scientific research undertaken during a student's medical thesis has wide variety of beneficial outcomes. It aims at exposing the MS to learn the techniques of a medical researcher and develop different analytical skills (1). Which is an individual benefit for the student and the publication of the results of the thesis is desirable. It validates the research and makes results available to researchers worldwide. This is the real value of scientific research and the best way to judge this work (9) (10). We concluded that the benefit of the thesis research splits into a two parts the individual benefits and the wider benefits which contains the published thesis.

A-Part 1:

In this part we are evaluating the benefit that medical students experience during their research. In order to evaluate this part we will use a survey as a quantitative study, the questionnaire will be answered from the post-graduate students and the pre-graduate students of FMPF.

The questionnaire is relating to how the medical students (MS) work according to the basics of a successful thesis process, and also the benefits and the difficulties the MS are experiencing.

Table 1: The process for a scientific thesis work

1-Choosing a research topic for study
<p>To choose a topic for the thesis, the medical student has to choose a speciality or the supervisor first to know the discipline they will working in. Then they have to select the topic which may be offered from the supervisor or they can create a bespoke topic suitable to their supervisor.</p> <p>How does the FMPF medical student choose their topic?</p>
2-Collaborate with the supervisor to design the research study and its goals
<p>To start any research we have to make goals and also methods to follow to achieve a beneficial research.</p> <p>How does the medical FMPF student build this research?</p>
3-Collect all the information and data pertaining to the research and outline the structure of the medical thesis
<p>To have an adequate level of the thesis research the students should have to build it from suitable resources and also from basic information i.e. information already known to them.</p> <p>How does the medical FMPF student achieve this adequate level and collect the information and data they need?</p>
4-Start writing and discussing the results
<p>After collecting the information and getting the results they have to analyse the data and formulate a discussion and deliver a scientific outcomes,</p> <p>How does the FMPF medical student arrive to do this discussion?</p>

The above questions (Table 1) were used as a basis to formulate the questionnaire to collect feedback regarding the difficulties and the benefits medical students experience during their thesis work. From this initial feedback we will produce practical solutions that are more, suitable for the MS and thus develop a new questionnaire that will be answered from the same medical students group.

1–Material

To collect the complications the medical students have during their thesis work, we are using a survey that was conducted amongst the population group who are the same population group for the second survey which proposes the students solutions.

The population of the study are the pre-graduate medical students who are currently undertaking their thesis from the 5th year and above and those who are postgraduate and have completed their thesis in the last 5 years from FMPF who are contactable via email or social media.

2–Method

The methods used to disperse the surveys was via electronic links contained within an e- mail or accessed via social media.

The answers to the questionnaire were collected real time and data was automatically updated with the results and statistics.

After collecting the answers and highlighting the difficulties the medical students are experiencing during their work we developed a new questionnaire with solutions to identify what will work best for the MS to achieve a more superior piece of work for their thesis.

B-Part 2 :

In this part we are evaluating The benefits that the other individuals (i.e. medical students, researchers, doctors, professors and the scientific community) receive from the student's final thesis work via:

- The further development of scientific knowledge and added value.
- The published medical thesis book on the medical FMPF university website (all the medical thesis from FMPF are published on the official faculty website).
- The published thesis: statistical study of the FMPF thesis that have been published outside of the FMPF website analysed in a retrospective, observational study.

1-Material

To investigate in our second part the statistical study of the published thesis of FMPF, we estimated that a six-year period would provide enough data for this study, between the year 2012 to the year 2017. This study was conducted to determine the medical thesis publication rate.

2-Method

We researched the number of the thesis that have been published outside the FMPF website with a retrospective and observational study. Each individual thesis from the year 2012 to the year 2017 that was found in the FMPF website was searched and compared to match the title, the date and the author. Appropriate key words from the title combined with, the candidate's name were used to identify the corresponding publication in both databases.

In case no hit was obtained the search was repeated using keywords with the name of the supervisor, and again with each co-supervisor. Using online methods including search engines such as Google, Bing, Yahoo, Yandex and scientific websites such PubMed, NCBI, le journal marocain de sciences médicales, Pan African-med-journal, research gate, docplayer and IslideDoc.

A published manuscript was considered to be a derivative of the thesis when it satisfied both of the following criteria: Firstly similar thesis title and at least one of the authors of the thesis was an author of the publication, and secondly at least one of the outcomes from the thesis was an outcome of the publication.

As result we compiled data that give a percentage of the thesis that have been successfully published outside the FMPF website and the percentage of the published speciality during this period, aswell as the percentage of each type of study .

IV. OUTCOMES:

A-Statistics of the surveys

Both of the surveys were written in French and disseminated to the same group of study and then translated into English, the population group of study was 867 students, 91 students answered the first survey and 74 students answered the second survey.

1-The statistic of the survey

After disseminating the survey to the medical student group, we received 91 respondents.

The results of the survey were collated and the data show us the following percentages:

Statistic 1: the survey result regarding the difficulties medical student experience during the medical thesis research.

1 Qu'est ce que une thèse en médecine ?

91 réponses



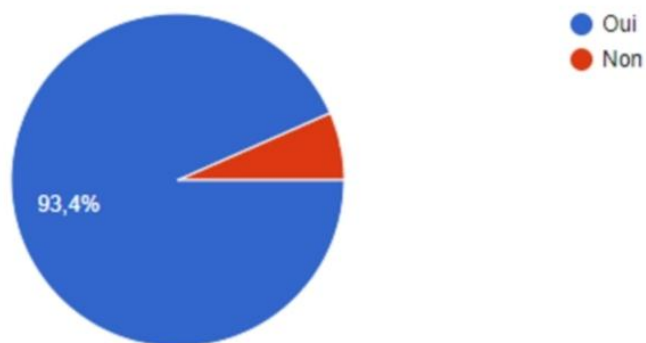
1- What is the purpose of thesis in medicine?

A. It is a mandatory step to acquire the title of doctor without any interest for the candidate.

B. It has direct benefits for the candidate The majority believe that the purpose of the medical thesis is a request to have the title of Doctor.

2- Pensez-vous qu'une thèse de médecine doit répondre aux exigences d'un travail scientifique académique:

91 réponses



2- Must the medical thesis meet with the requirements of an academic scientific work?

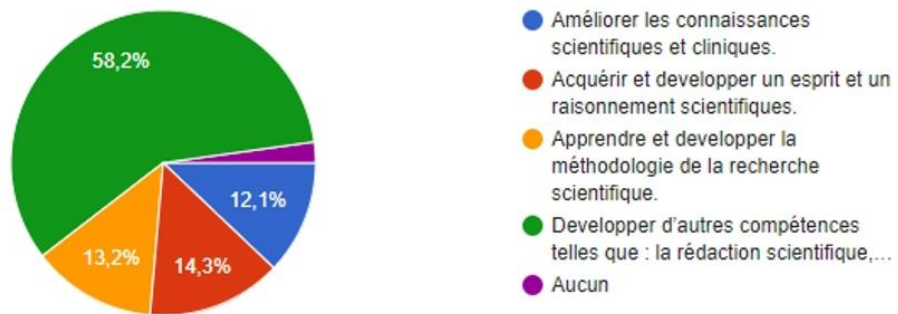
A Yes

B. No Almost all the resp

ponses agree that the medical thesis should meet with the academic requirements.

3- Une thèse en médecine présente les bénéfices directs suivants pour le candidat:

91 réponses



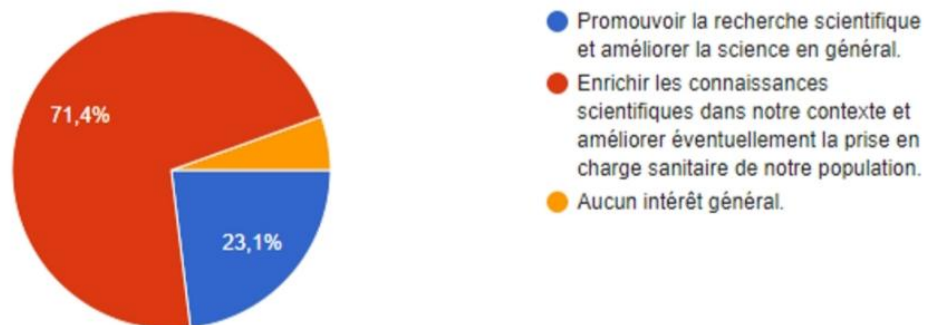
3- A medical thesis presents the following direct benefits for the candidate:

- A. Improve scientific and clinical knowledge.
- B. Acquire and develop a scientific mind and reasoning.
- C. Learn and develop the methodology of scientific research.
- D. Develop other skills such as: scientific writing, analytical reading and critical bibliographic references
- E. None.

Majority of the medical students believe that the medical thesis is to develop the research skills in scientific writing, analytical reading and critical bibliographic references.

4- Une thèse en médecine présente les bénéfices généraux suivants:

91 réponses



4- A medical thesis has the following general benefits:

A. Promote scientific research and improve science in general.

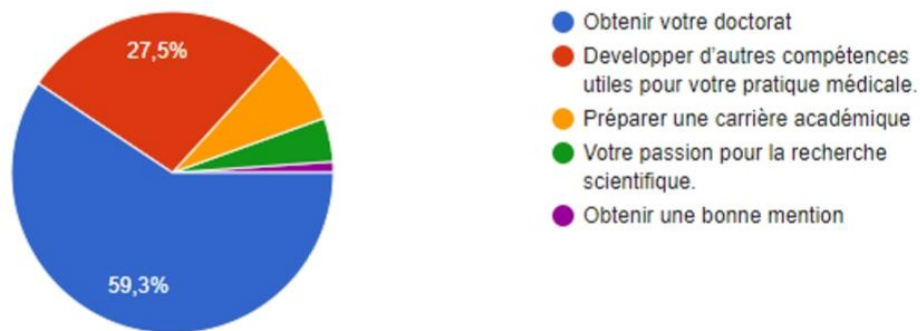
B. To enrich scientific knowledge in our context and possibly improve the health care of our population.

C. No general interest.

Nearly two thirds of the MS answered that the general benefit of the medical thesis is to enrich the scientific knowledge.

5 Qu'est ce qui vous motive dans le processus de préparer une thèse:

91 réponses



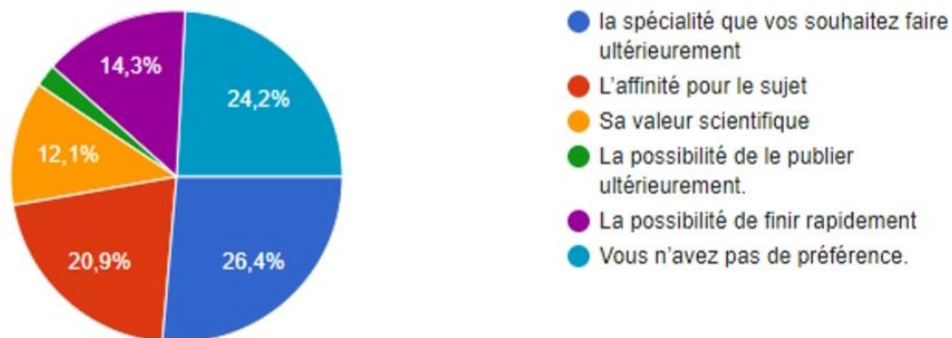
5- What motivates you in the process of preparing a thesis?

- A. Get your doctorate
- B. Develop other useful skills for your medical practice.
- C. Prepare an academic career
- D. Your passion for scientific research.
- E. Get a good mention

The answer regarding the motivation of the preparation of medical thesis was dominated by the aim to get a doctoral degree.

6 Le choix de votre sujet de thèse dépendait de/des critères suivants:

91 réponses



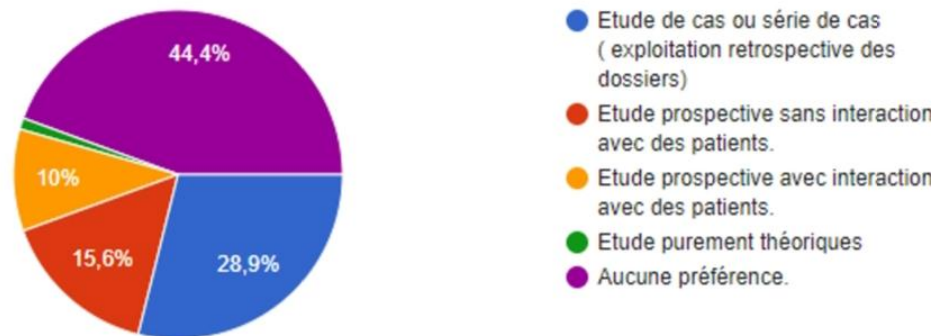
6- The choice of your thesis subject depends on the following criteria:

- A. The specialty that you want to do later.
- B. Affinity for the subject
- C. Its scientific value
- D. The possibility of publishing it later.
- E. The possibility of finishing quickly
- F. No preference.

The criteria of the choice of the thesis topic answers are almost all equal.

7- Quel type d'étude vous préférez dans un travail de thèse:

90 réponses



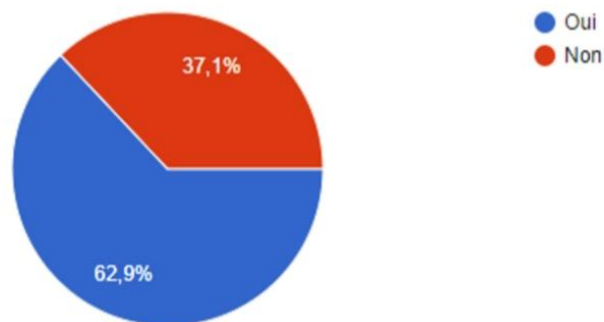
7- What type of study do you prefer in a thesis work?

- A. Case study or case series (retrospective case management)
- B. Prospective study without interaction with patients.
- C. Prospective study with interaction with patients.
- D. Purely theoretical study.
- E. No preference.

The majority of medical students do not have any preferences relating to the type of study of the medical thesis research.

8- pensez-vous à publier votre thèse ou avez vous déjà publié votre thèse ?

89 réponses



8- Do you think about publishing your thesis or have you already published your thesis?

A .Yes

B. No

More than a half of the answers show that medical students have the determination to publish their thesis

9- Le choix de l'enseignant encadrant dépend de/des critères suivants

91 réponses



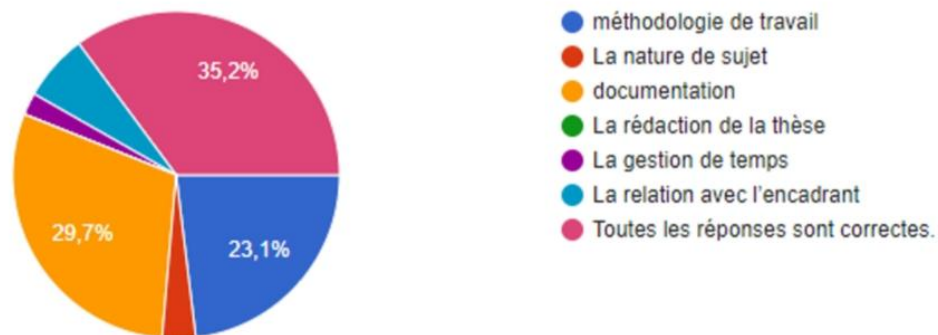
9- The choice of the supervising teacher depends on / from the following criteria

- A. The specialty that you want to do later.
- B. Methodology and competence
- C. Their availability.
- D. Your affinity for the supervisor
- E. The possibility of finishing quickly
- F. You do not have a preference.

The responses show no preference regarding choice of the thesis supervisor.

10- Les difficultés que vous rencontrez ou avez déjà rencontré lors de la préparation de votre thèse :

91 réponses



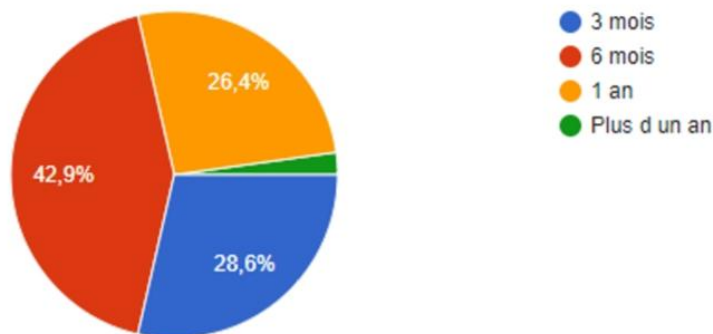
10- The difficulties you are meeting or have already encountered during the preparation of your thesis concern:

- A. The methodology of the work
- B. The nature of the subject
- C. The documentation
- D. writing the thesis
- E. Time management
- F. The relationship with the supervisor
- G. All the above answers are correct.

The difficulties the medical student are facing during the preparation were dominated by the methodology and documentation

11- A votre avis la durée optimale de préparation de la thèse doit être de:

91 réponses



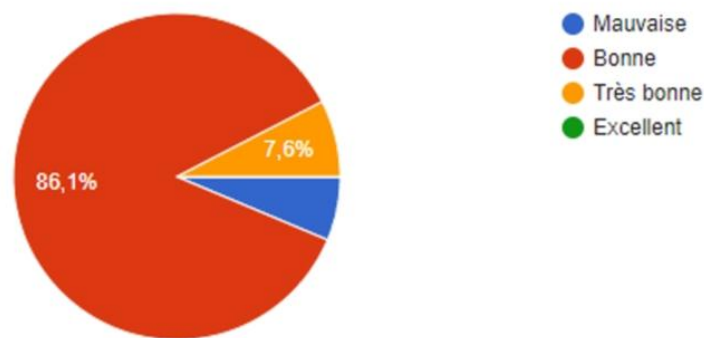
11 – In your opinion the optimal duration of preparation of the thesis must be:

- A. 3 months
- B. 6 months
- C. 1 year
- D. More than a year

The optimal duration of preparation recommended by the medical students is less than a one year.

12-Comment jugez-vous votre expérience durant la préparation de votre thèse?

79 réponses



12- How do you rate your experience during the preparation of your thesis?

- A. Bad
- B. Good
- C. Very good
- D. Excellent

The majority of the medical students rate their preparation as overwhelmingly a good experience.

2-The statistic of the solutions survey

After disseminating the survey to the contactable medical students, we received 75 respondents. The results of the survey were collated and the data show us the following percentages:

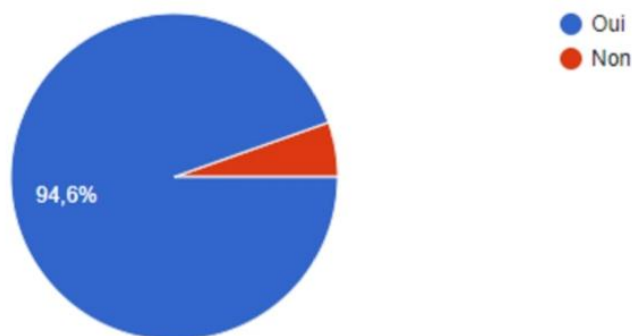
Almost all the medical students' who answered to the question regarding solutions suggested in the second survey agreed with those recommendations which are:

- Having a list of thesis topics by speciality available for the MS facilitate in the choice of the topic.
- organizing training seminars for the MS on the methodology of scientific work would minimize the difficulties encountered during the preparation.
- organizing training seminars on scientific writing and publishing encourage the production of publishable thesis.
- facilitate access to international bibliographic references
- requiring an optimal duration of preparation encourage to achieve a thesis of high scientific quality.

Statistic 2: the survey result regarding the solutions to improve the medical thesis

1-Mettre à la disposition des étudiants une liste des sujets par spécialité ou par service faciliterait le choix du sujet.

74 réponses



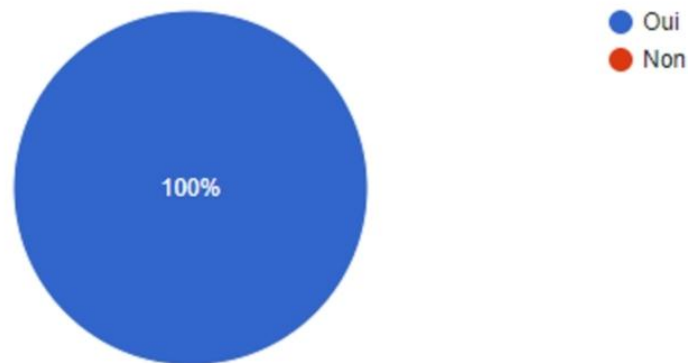
1- Would having a list of thesis topics by specialty or discipline available for the medical students facilitate in their choice of topic:

A. Yes

B. No

2- Organiser pour les étudiants des séminaires de formation sur la méthodologie du travail scientifique minimiserait les difficultés rencontrées lors de la préparation de la thèse:

74 réponses



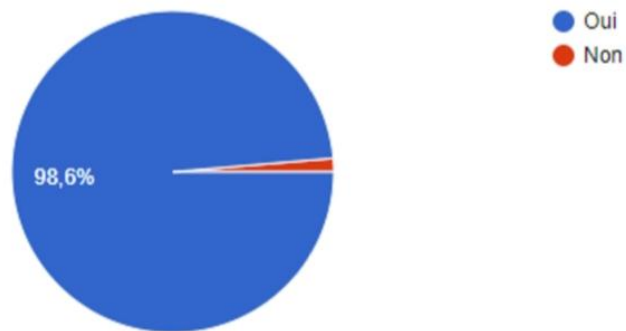
2- Organizing training seminars for students on the methodology of scientific work would minimize the difficulties encountered during the preparation of the thesis:

A. Yes

B. No

3- Organiser pour les étudiants des séminaires de formation sur la rédaction et la publication scientifiques encouragerait la réalisation de thèses publiables:

74 réponses



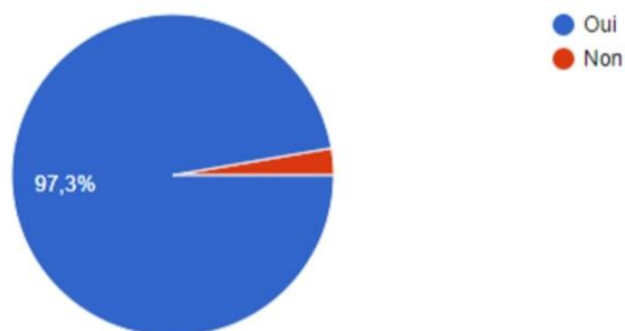
3- Will organizing training seminars for students on scientific writing and publishing encourage the production of publishable thesis:

A. Yes

B. No

4- Faciliter l'accès aux références bibliographiques internationales pour les étudiants en instance de thèse pallierait les difficultés liées à la documentation:

74 réponses



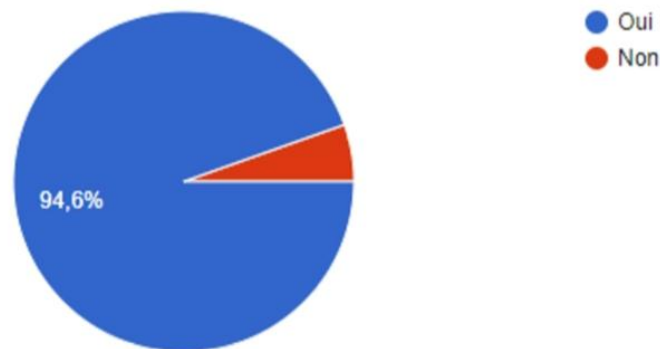
4- Facilitating access to international bibliographic references for PhD students would overcome the difficulties related to documentation:

A. Yes

B. No

5- Exiger une durée optimale de préparation d'au moins 1 an encouragerait la réalisation de thèses de haute qualité scientifique:

74 réponses



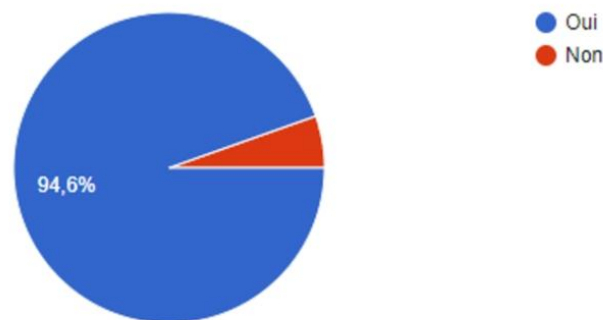
5- Would requiring an optimal duration of preparation of at least 1 year encourage the achievement of theses of high scientific quality:

A. Yes

B. No

6- Encourager les étudiants en instance de thèse à réaliser des thèses publiables:

74 réponses



6- Encourage postgraduate students to produce publishable medical theses research:

A. Yes

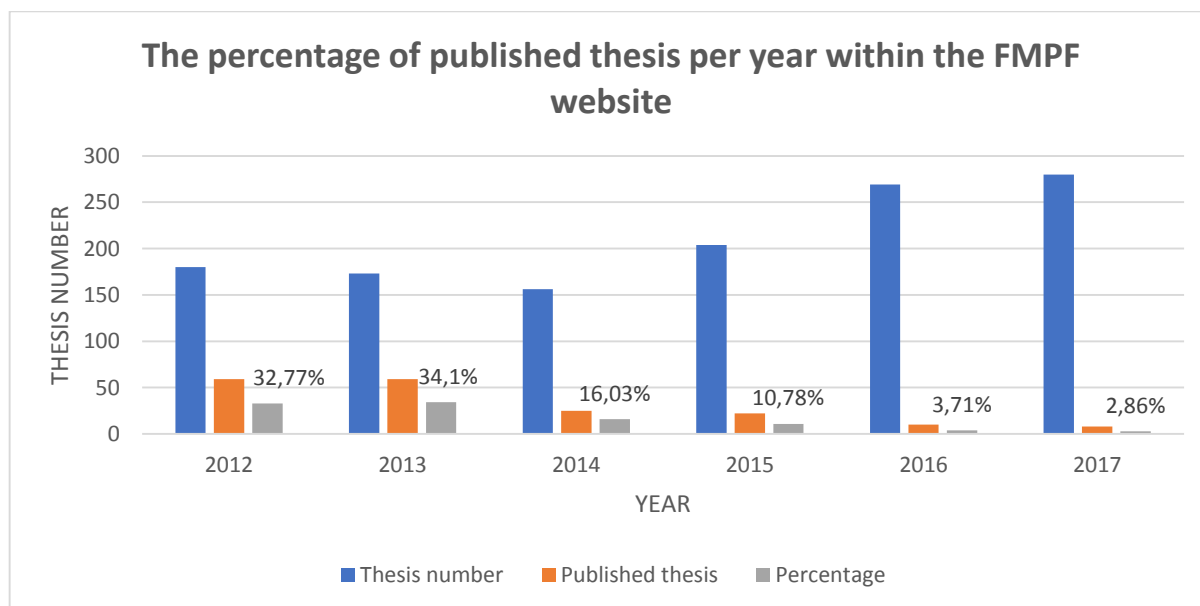
B. No

B-Statistic of the published thesis from FMPF

One thousand two hundred and sixty two theses, submitted between January 2012 and December 2017, were retrieved from the official FMPF website. Of these one hundred and eighty three (14.5%) theses were subsequently published in websites outside of the FMPF website as is illustrated in table 2. In the year 2012 there were 32.77% published thesis similar to the year 2013 with 34.10%. After that the percentage started to decrease and the lowest publication was for the year 2017 with only 2.86% (table 2, diagram 1).

Table2: The percentage of published thesis per year within the FMPF website

Year	Thesis number	Published thesis number	Percentage
2012	180	59	32.77%
2013	173	59	34,10%
2014	156	25	16.03%
2015	204	22	10.78%
2016	269	10	3.71%
2017	280	8	2.86%
Total	1262	183	14.5%

Diagram 1:

The majority of the thesis that been published between the years 2012 and the year 2017 were dominated by the paediatric specialty (16.94%) then traumatology (12.57%) after that Visceral surgery with (10.38%),and the lowest was Endocrinology (0.54%) as it is showing in (table 3, diagram 2)

Table 3: number of thesis that have been published by speciality

Specialty	Number of thesis published between year 2012 and 2017	Percentage
Epidemiology	14	7.65%
Nephrology	6	3.28%
Endocrinology	1	0.54%
Traumatology	23	12.57%
Cardiology	7	3.82%
Paediatric	31	16.94%
Dermatology	6	3.28%
Gynaecology	8	4.37%
Cardiovascular surgery	5	2.73%
Pulmonology	3	1.63%
Urology	8	4.37%
Ophthalmology	5	2.73%
Neurology	7	3.82%
Visceral surgery	19	10.38%
Neurosurgery	7	3.82%
Anatomical pathology	2	1.09%
Rheumatology	4	2.19%
Internal medicine	8	4.37%
Resuscitation	5	2.73%
ENT	6	3.28%
Oncology	2	1.09%
Thoracic surgery	3	1.63%
Genetic	2	1.09%

Diagram 2:

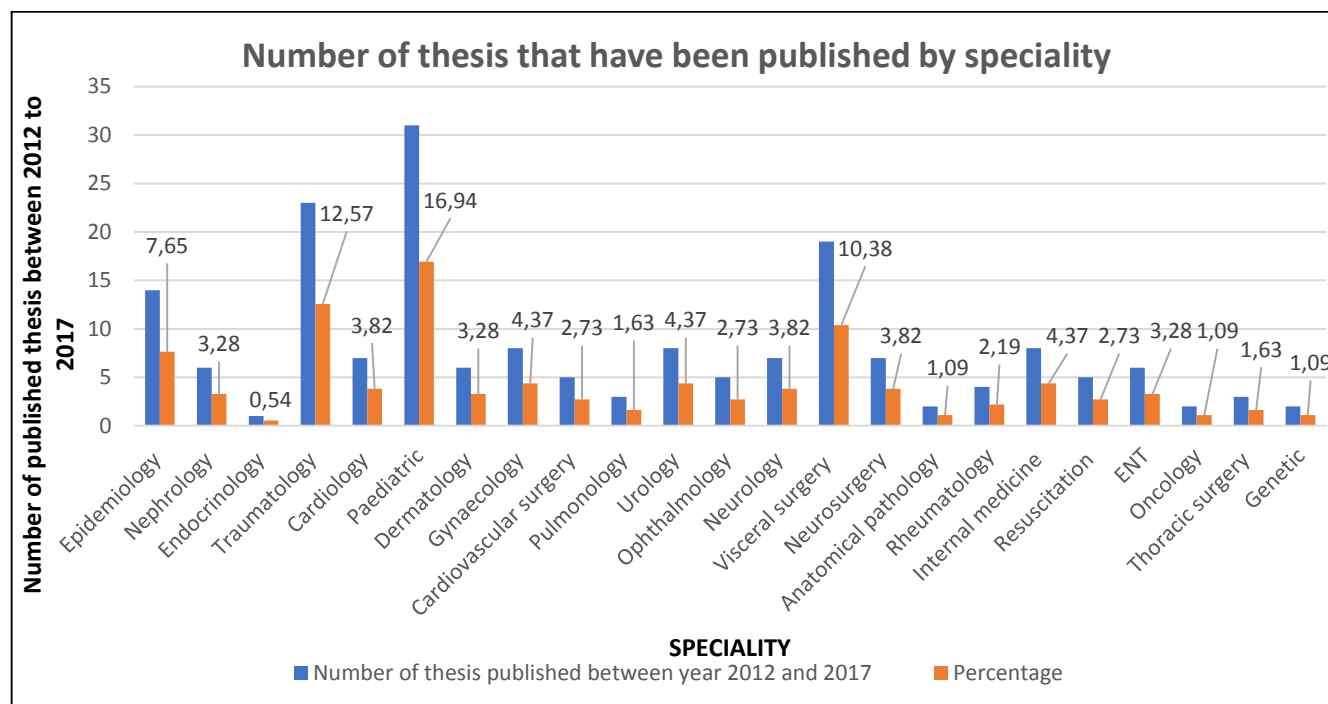
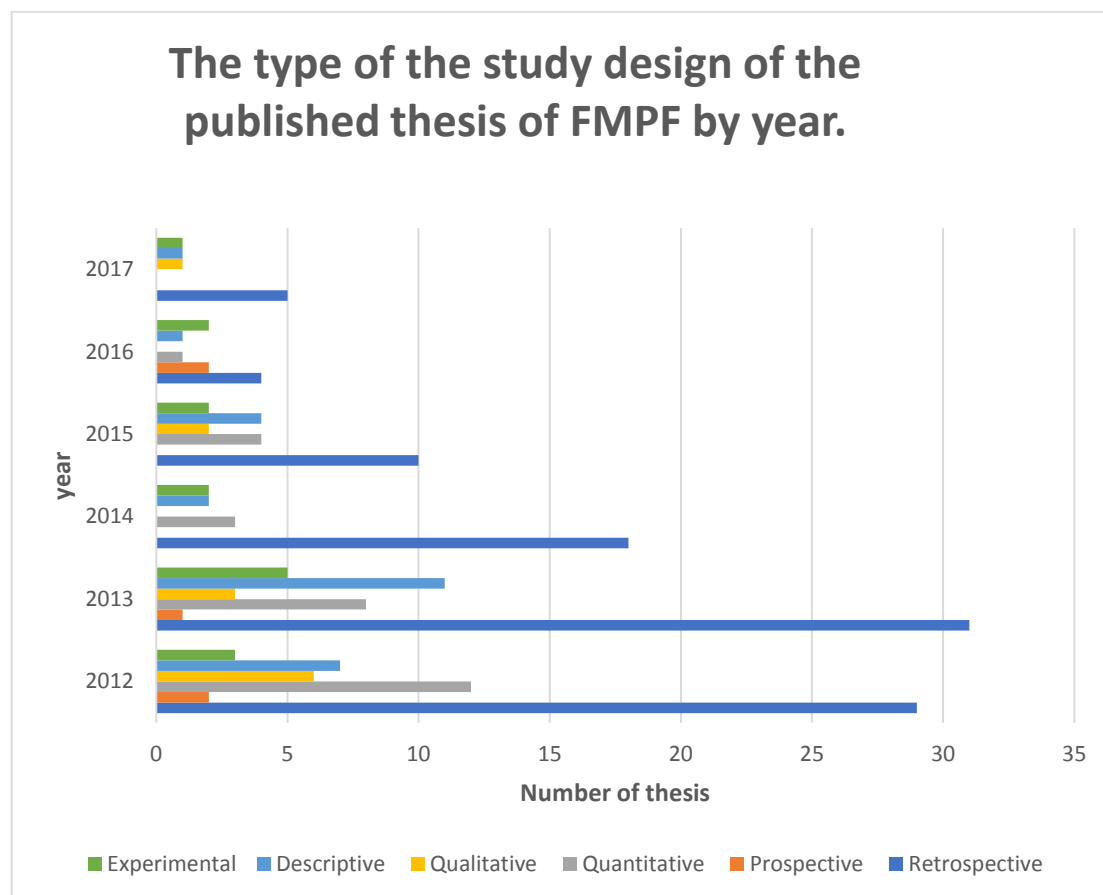


Table 4: The type of the study design of the published thesis of FMPF by year.

Study/ Year	2012	2013	2014	2015	2016	2017
Retrospective	29	31	18	10	4	5
Prospective	2	1	0	0	2	0
Quantitative	12	8	3	4	1	0
Qualitative	6	3	0	2	0	1
Descriptive	7	11	2	4	1	1
Experimental	3	5	2	2	2	1

Diagram 3:



From the table 4 And Diagram 3 we observe that the majority of the published thesis are retrospective studies and the lowest was the prospective research.

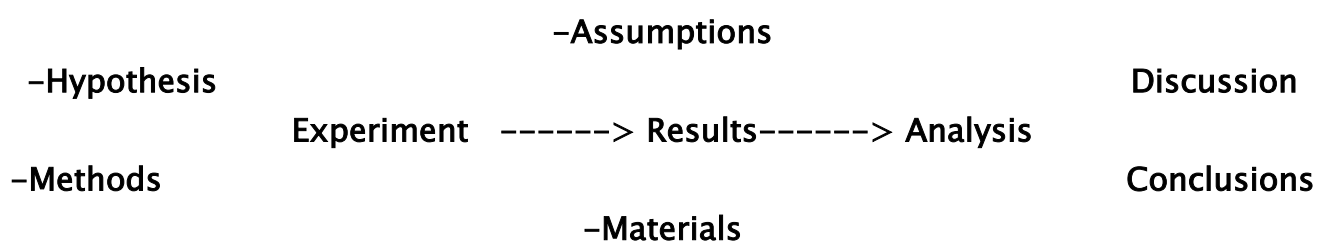
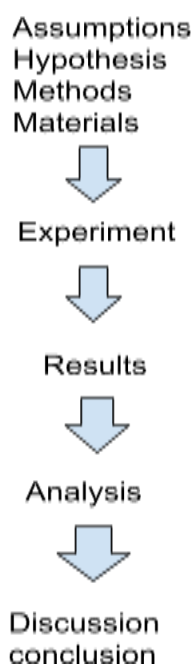
V. DISCUSSION:

Writing a thesis is an essential requirement for the undergraduate medical degree in Morocco. It aims at development of a spirit of enquiry, and exposes the candidate to the techniques of research. In the long term, medical research improves the student’s independent analytical problem-solving skills, and ability to critically interpret scientific literature (1).

The process of writing a medical thesis can be simple if it is following the scientifically set out structure. There are three aspects to this: structure, substance and style, but all three are entwined.

The student should start from beginning by working in methodological stages. They should understand what should be done first and why, in order to have a clear vision of the topic at hand as well as their hypothesis.

Diagram 4: This diagram illustrates the relationship between the different stages in the experimental process (7)



If the research topic is pertinent and the work is following the different stages outlined above in the experimental process coupled with a good hypothesis suitable methods and analytic discussion it will invariably lead to high quality scientific thesis in most cases.

All the statistics show that the medical thesis is a prerequisite to get the medical degree (11).

In our survey the majority were adopting the same idea with 64.8% answering that the purpose of medical thesis is a mandatory step to acquire the title of doctor without any interest for the candidate, against 35.2% who believe that it has direct benefits for the candidate (statistic1,Q1), in the other hand the studies base in Germany proved that the majority of Medical students believe that the benefit of the medical thesis is to achieve a higher level of degree, and the medical thesis improve the quality of the medical research as well (12).

At the commencement of the thesis the student rarely has the skills or knowledge necessary to conceptualize and design a study with methodical structure (8). When we asked the medical students regarding the principle difficulties they encountered during their thesis preparation the two greatest factors declared were firstly documentation sources with 29.7% and secondly 23.1% stating difficulty in the methodology of the work caused greatest complication (statistic1,Q10)

Most medical students 93.4% believe that the medical thesis must meet with the requirements of an academic scientific work (statistic1, Q2). And also the studies in Germany proved that usually medical students choose to have a medical thesis so they can achieve a higher level of degree and to continue the academic career route This research also shows that without a thesis there are fewer chances to have quality opportunities for

research.(12) in the other hand almost the half of medical students from FMPF believe that what motivates them in the process of preparing is to get their doctorate with 59,3% and develop other useful skills for your medical practice with 27.5%(statistic1,Q5)

In the survey the medical thesis presents the following direct benefits for the medical students ,The respondents to the survey stated 58.2% to develop other skills of a scientific writing as well as the analytical reading and critical bibliographic references, 14.3% to acquire and develop a scientific mind and reasoning, 13.2% Learn and develop the methodology of scientific research, 12.1% Improve scientific and clinical knowledge and 0% none (statistic1,Q3). When questioned about the general benefits of the medical thesis 71.4% responded that to enrich scientific knowledge in our context and possibly improve the healthcare of our population. To this question 23.1% responded that promoting scientific research and improving science in general, and none of those questioned replied that there is no benefit to the medical thesis (statistic1, Q4). From that we understand that medical students realise the fact that the medical thesis do have impact benefits to the medical students as well as to the research.

When we questioned the students about the criteria that influenced their choices of thesis subject they answered with the following responses, 26.4% were influenced by the specialty they want to do later, 24.2% had no preference, 20.9% for the affinity with the subject and 12.1% for its scientific value (statistic1,Q6). The type of research study the medical students preferred for their thesis were almost equal and 44.4% had no preference (statistic1,Q7). The main criteria that the respondents used for choosing their supervisor was dependant on Methodology and competence 19.8%, and 18.7% the specialty that medical student wanted to do later and 16.5% for the supervisor availability (statistic1, Q9). Regarding the optimal duration of preparation for

completing the thesis, 42.9% of those surveyed answered 6 months and 28.6% for 3 months and the rest stated a year or more to complete their research (statistic 1, Q11).

The thesis research from the year 2012 (8) as well as the statistic (table 2) evidenced that a significant number of theses are not published, the survey results show that 62.9% of Medical students stated that they would like to publish or have already published their thesis outcomes (statistic 1, Q8).

From the survey evidence obtained from current and former medical thesis students we can determine and infer that medical students have difficulties during their thesis preparation and they also do not realise the benefits of Medical thesis. However they do not have the skills to take full advantage of this despite most of the MS having the determination to publish their outcomes, they clearly are lacking the guidance needed to make the leap needed to publish their work.

After producing a scientific outcome the next logical step in the process of any research is to disseminate the results and the added knowledge. Traditionally this can be achieved either by presentation at a scientific meeting or publication in a journal (13). Presentations rapidly provide new information to conference attendees. However, this data is not available to the entire scientific community unless published in a reputed, widely circulated scientific journal or website. The publication in a journal and scientific websites is the best test to judge the quality of the research (14).

Researchers have suggested also that the real value of scientific work lies in its publication and makes research results visible and easily accessible to scientists worldwide (9). In addition the published thesis informs the scientific community about the integration of teaching and research in medical education, it enhances the academic and professional credibility of the researchers, as well as that of the

department and of the institution (14) (19). However, many theses remain unpublished (15) (16). Despite the acknowledged advantages of publishing, getting students to publish the results of their thesis seems to be a global problem (15). So we reviewed the literature from smaller countries around the globe.

Lack of publication of thesis-derived papers has also been reported from France, Finland, India and Croatia. Low publication rate makes the quality of research suspect (11). And compromises the quality of postgraduate medical education (16) locally we have found that all the medical thesis from faculty of medicine and pharmacy of Fez are published in the office faculty website each year and per specialty. Additionally the information is available publicly and freely to download electronically in PDF format. And also we have discovered that the number of the published thesis outside of the FMPF website is decreasing per year (table 2). Just 14.5% of the total thesis submitted over a six year period in the university (FMPF) were published. Otherwise the overwhelming number of graduate medical student thesis were not published (85.5%). First authorship issues may have pose problems at the commencement of the thesis, the medical students rarely have the skills or knowledge necessary to conceptualize and design a scientific study (17) and the second issue is the topic is not suitable and publishable.

To determine the factors that may influence the rate of the publication of medical thesis in

FMPF we looked in to the type of study aswell as the speciality of the published thesis and it shows that there is many Variation of type of study (table 4), and the majority of the thesis

were dominated by Paediatric and Traumatology followed by Visceral surgery (table 3) However, analysis of these abstracts revealed that the factor influencing the rate of thesis publication is not dependent on the chosen speciality neither the type of study, rather it is an interesting possibility that it is the topic chosen which is the significant factor in the research base in Indian's published medical thesis (13). The topics should be selected keeping in view their publishable quotient. Simple studies could be chosen over complex, multiple objective ones (13).

Most of the thesis that are published outside the FMPF website appeared in the year after completion of the post-graduation course having been published initially in the FMPF website itself. The remaining thesis that were published, were done so many years after the initial thesis presentation. This delay in publication is clearly a missed window of opportunity indicative of a malaise in the system of postgraduate medical education. The postgraduate medical education is supposed to be an initiation to research and to push medical students to disseminate their results (the thesis are published in the official university website but not in other platforms). In our setup, medical students are not encouraged to publish their thesis research and they are not choosing topics that are more likely publishable. Publication success has been linked to the supervisors supportive role in scientific publishing activity (18) Supervisors have a responsibility as mentors to encourage postgraduates to publish their thesis, and to facilitate professional progression.

Since we found that only 14.5% of medical thesis conducted in the faculty of medicine and pharmacy of fez are published. We were unable to identify factors that promote the publication. However we have found some reasonable solutions to

encourage and promote the wider benefits and to increase numbers of published thesis.

We conclude that very little is being done to encourage postgraduates to publish their final thesis, and as clearly highlighted by the results of our survey (statistic 1) a majority of the medical students have the will to published their outcome (statistic 2, Q 6), but lack external motivation that has been shown to be crucial in assisting publication of the work.

The postgraduate medical education program as well as the thesis supervisor should provide guidance to the medical student to choose a publishable topic. As well as organizing training seminars for students on scientific writing and publishing, which would encourage the production of publishable theses (statistic 2, Q3) which was highly recommended by the second survey responses.

We observed from the first survey results that medical students were experiencing difficulties in choosing a scientifically suitable thesis topic as well as understanding and applying their research and scientific work in a methodical manner and they encountered issues trying to gain access to suitable references sources (statistic part 1). The vast majority of students explained that they would be assisted if having a list of thesis topics by specialty or discipline readily available (statistic part 2, Q1). In addition facilitating access to an international bibliographic reference bank would overcome the difficulties related to obtaining suitable reference sources (statistic 2, Q4).

It is the policy in the university that during the 6th year of medicine, students have one seminar in preparation for the thesis, in which they are given a lecture about the variations on scientific studies. This seminar does not feature any advice on the methodology that students should follow while they will be working on their thesis. The overwhelming number of respondents to our survey suggested organizing more

training seminars for students on the methodology of scientific work would minimize the difficulties they will encounter during the preparation of the thesis (statistic 2, Q2). Linked to question 2 is the response to question 3, relating to organizing training seminars for students on scientific writing and publishing encourage the production of publishable theses (statistic2, Q3). The results of this show that students will greatly benefit from more seminars in this area.

One of the most significant suggestions made in the second survey was requiring an optimal duration of preparation of at least 1 year to encourage the achievement of theses of high scientific quality (statistic 2, Q 5). To this end there was wide agreement in responses that implementation of a deadline would greatly help to achieve their end target of the student.

We have found some reasonable solutions to encourage and promote the wider benefit of Medical thesis and increase the numbers of published thesis. However, We were unable to identify the factors that are responsible for the low publication rate in our environment.

A further analytic study is more likely to determine those factors.

VI. CONCLUSION

The writing of a thesis is an essential requirement of the medical degree in Morocco.

The medical student begins their research without understanding the benefit of conducting a thesis and frequently experience significant difficulties. Additionally encouragement of postgraduates to publish their final thesis has been shown to be severely lacking.

In our research we identified the needs that the medical students experience during the preparation of their thesis by a developed survey and as a result suggested solutions that improve the scientific quality of the thesis in medicine in order to have a productive and publishable thesis research.

VII. SUMMARY

Preface:

Writing a thesis is an essential requirement for the undergraduate medical degree in Morocco.

The medical students start this without in general realising the benefit of their work and also crucially without understanding how to prepare for it.

Having a concise reasoning and the comprehending the benefits of this thesis undertaking can help the medical student to know the way to achieve a good productive medical thesis work.

Additionally this thesis will provide explanation of the benefits of this work combined with learning from the previous thesis, highlighting the problems and proposing solutions to the issues raised.

Introduction:

Medical students have to prepare thesis for academic purposes in the final year of their studies to fully qualify as a medical doctor.

A significant number of Medical students have to produce this work without understanding the true benefits, the reasoning of their thesis or how to select a topic according to their needs that is suitable to write.

Further to this students are not supported adequately by having sufficient number of lectures and critically guidance relating to teamwork with the thesis supervisor that will aid them in producing a thesis that is of high quality.

PURPOSE / THE AIM

The object of this thesis is to:

- Clarify for the Medical students the reason and the benefit of their coming work.
- Outline in broad terms the information and the questions they need to know before selecting a thesis topic, choosing a supervisor and starting work on their thesis.
- Find the problems and issues that the pre-graduate medical students are facing.
- Learn from the previous work (difficulties, experiences and solutions)
- Give suggestions for thesis students to enable them to achieve a higher quality of scientific research work.

METHOD

Gathering the difficulties and identifying the needs of medical students experience during their thesis preparation with a developed survey and also suggest solutions that will be more suitable for them.

Evaluation of the previous thesis and have data on the prior thesis from FMPF that have been published.

SUPPLIES Methodology

Evaluate the previous thesis publication using statistical study, and with N questionnaires we will approach the needs of medical students and understand their difficulties during their preparation. Also develop the ideas and to find out and to suggest the solutions medical students to achieve productive work between medical students and their supervisors for a fruitful and successful thesis.

MAJOR CONCLUSION

This thesis will approach and accumulate the questions that need to be answered to find solutions to have a productive and scientifically publishable medical thesis.

Résumé

La rédaction d'une thèse est une exigence essentielle du diplôme de médecin au Maroc.

L'étudiant en médecine commence ses recherches sans comprendre le bénéfice de son travail de thèse et au même temps se confronte à des difficultés importantes au cours de sa recherche.

Le but de notre recherche est d'aider l'étudiant en médecine à réaliser un travail de thèse scientifique productif de bon qualité, et d'évaluer les thèses précédentes en FMPF.

On a identifié les difficultés et les besoins rencontrés par les étudiants au cours de leurs travaux de thèse par un questionnaire développé et suggère des solutions qui permettent d'améliorer la qualité scientifique de la thèse en médecine afin d'avoir un travail de recherche scientifique et publiable.

ملخص

كتابة أطروحة هو شرط أساسي للحصول على شهادة الطبيب في المغرب.

يبدأ طالب الطب بحثه دون فهم فائدة عمل أطروحته وفي الوقت نفسه يواجه صعوبات كبيرة خلال بحثه.

الغرض من بحثنا هو مساعدة طالب الطب على القيام بأطروحة علمية مثمرة ذات نوعية جيدة ، وتقييم الأطروحات

السابقة في جامعة الطب و الصيدلة بفاس.

تم تحديد الصعوبات والاحتياجات التي واجهها الطلاب خلال بحثه في إطار استبيان تم تطويره و اقتراح الحلول التي

تسمح بتحسين الجودة العلمية للأطروحة في الطب من أجل الحصول على بحث علمي ذو جودة عالية ،

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