

## The motivating factors of Marrakech's faculty of medicine and pharmacy residents studying medical biology

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### Abstract

Motivation is a key factor in success. If it is high, it suggests a high probability of success; a lack of motivation can lead to failure or dropout.

The objective of our study is to know the motivational factors, the quality and the strength of the motivation among the residents in medical biology at the Faculty of Medicine and Pharmacy of Marrakech, as well as their satisfaction with their choice of specialty.

In this context, we conducted a descriptive and analytical study among residents in medical biology at the Faculty of Medicine and Pharmacy of Marrakech, through a questionnaire sent by e-mail to specify the socio-demographic characteristics of residents and their motivational determinants to the choice of specialty.

We collected 50 questionnaires with a response rate of 79.97%. The majority of the residents who responded to the questionnaire were female. Motivation scores were high overall for all residents. Intrinsic motivation and perceived value of the task were the highest. Attraction to science and altruism are the most important factors in the choice of specialty among residents. The degree of motivation is significantly higher among residents with volunteer status ( $p < 0.005$ ) due to the monetary income of the specialty in the private sector. The majority of residents (93.22%) were satisfied with their choice of specialty.

Autonomy support and continuing education are essential to maintain motivation at a high enough level to effectively challenge residents.

**Keywords:** Intrinsic motivation; Extrinsic motivation; Biology resident; Self determination

### 1. Introduction

Motivation is the essence of decision-making processes that lead to action. It is defined as an intra-individual force, with determinants that produce "the initiation, direction, intensity and persistence of behavior" [1].

There are many theories of motivation, some focusing on the type of motivation while others focus on its strength or quality [2].

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Some authors consider that there are three basic psychological needs in an individual: the need for competence, the need for social belonging and the need for self-determination [3].

Self-determination is defined as the need for an individual to perceive that he or she alone is responsible for making choices and decisions. This need has a strong influence on motivation, insofar as a high level of self-determination reflects the individual's free engagement in an activity that he or she prefers because of the interest, satisfaction, and even pleasure that it provides [3]. This is a form of motivation known as "intrinsic motivation" (IM). In contrast to IM, extrinsic motivation (EM) is linked to a commitment to an activity that is constrained by the search for rewards or by the desire to avoid sanctions [4].

Therefore, identifying motivational levers in biology residents will allow us to positively affect the motivation of residents and, therefore, their involvement and perseverance, with the aim of promoting better learning for better training [5].

There are three motivational levers that can positively affect residents' motivation. These are the perception of the value of the task, the perception of effectiveness and the perception of controllability [5].

The study of motivation in biology residents is important because medical training differs from other university courses in terms of workload, practical hospital training and theoretical education in order to become a specialist in medical biology.

Through our study, we set as objectives:

- Determine the socioeconomic characteristics of the residents,

Identify the reasons why they chose this specialty,

To determine the different types of motivation among the residents,

- To assess residents' satisfaction with their career choice.

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## 2. Material and methods

This is a descriptive and analytical cross-sectional study aiming to identify motivational determinants in medical biology residents, through their responses. All the residents in medical biology of the Faculty of Medicine and Pharmacy of Marrakech of the academic year 2021/2022 were invited by e-mail to answer a questionnaire sent online (Google Form®). This questionnaire was specially developed to conduct our survey, based on a review of the literature. The questionnaire is structured in two parts

- Part One: Contains general data to determine the socioeconomic characteristics of the study population such as age, gender, and volunteer or contract residency status. Namely, if the position is voluntary, the resident does not engage with the public health department. If the position is contractual, the resident is not required to enter into a contract with the Ministry of Health's public health services for a period of eight years after graduation.
- Second part: Aims to measure the different components of motivation. It was developed on the basis of Viau's (2009) model of motivational dynamics [5]. This dynamic is forged around perceptions of three components that influence each other:
  - Perception of efficacy: reflects the learner's perception of his or her ability to succeed in what is asked of him or her. The corresponding question is: "Am I able to do what I am asked to do?" [6];
  - The perception of the value of the task: corresponds to a person's appreciation of the usefulness, interest and importance of the task to be performed. The corresponding question is: "What good will what you are asking me to do or learn do me?" [6];
  - Perceived controllability: refers to the degree of autonomy and control that a learner perceives in their training. The corresponding question is, "Do I have a say in what I am asked to do?" [6].

This questionnaire, with 27 items, assesses intrinsic motivation, extrinsic motivation, as well as perceived controllability, perceived task value and perceived competence or effectiveness.

All participants were informed about the objectives of the study and their participation was voluntary and anonymous.

The statistical analysis was performed using SPSS software. The descriptive analysis consisted of the calculation of frequencies for the qualitative variables, and means for the quantitative variables. The asymmetric distribution of the variables was studied by the Mann Whitney test, and the comparison of the qualitative variables used the Chi2 statistical test. The significance level was retained for a  $p < 0.05$ .

### 3. Results

#### 3.1. Descriptive statistical study

##### 3.1.1. 1. Sociodemographic characteristics of the population

The total number of questionnaires collected at the end of the data collection is 50 out of a total number of biology residents of 65, a response rate of 77% (table 1)

**Table 1** Descriptive table of socio-demographic characteristics

<b>Variables</b>	<b>Descriptive</b>
Age	28.94± 2.575ans
<b>Gender</b>	
Men	34%(n=17)
Women	66%(n=33)
<b>Marital Status</b>	
Single	54%(n=27)
Married	46%(n=23)
<b>Residency Status</b>	
Contractual	26%(n=13)
Volunteer	74%(n=37)
<b>Residency Year</b>	
1st year	26%(n=13)
2nd year	32%(n=16)
3rd year	16%(n=8)
4th year	26%(n=13)
<b>Department</b>	
Bacteriology-Virology	20%(n=10)
Biochemistry	20%(n=10)
Hematology	12%(n=6)
Immunology	22%(n=11)
Parasitology-Mycology	26%(n=13)

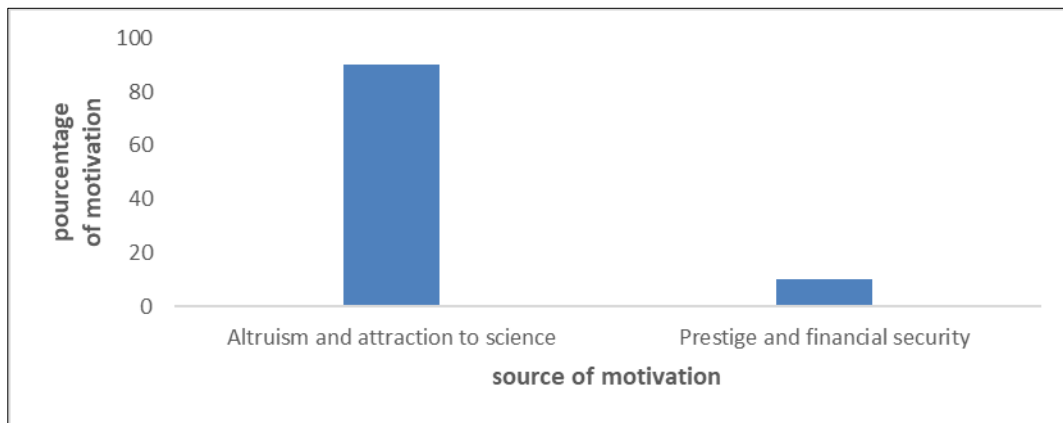
**3.2. Determinants of motivation among biology residents (table 2)**

**Table 2** Descriptive table of response rates to motivational drivers

Components of motivation	Response rate
Extrinsic motivation	68.5%
Intrinsic motivation	77.75%
Perceived effectiveness	61.66%
Perceived value of the task	89.33%
Perceived controllability	3.26 ± 0.04

**3.3. Source of motivation**

In our study, the sources of motivation among the residents, are distributed as follows:



**Figure 1** Distribution of residents according to their sources of motivation

**3.4. Analytical statistical study (tables 3 and 4)**

**Table 3** Correlations between gender, residency status and pride table :

	Residency status by gender:				p
	Man		Woman		
	contractual	volunteer	contractual	Volunteer	
Pride	0	14	8	25	0.035

**Table 4** Correlations between residency status and level of motivation table :

Residency status	contractual	volunteer	p
Levels of motivation	3.7 ± 0.12	4,8 ± 0.04	0.003

**4. Discussion**

The study of motivation dates back to the 1930s by the two psychologists Ernest DICHTER and Louis CHESKIN who called "motivation" the set of irrational and Unconscious factors of human conduct [7].

The concept of motivation has given rise to different definitions and qualifications, both redundant and complementary. Currently, no consensus has been adopted for a universal definition of motivation [8].

Several theories have been developed in the study of motivation based on various models mainly: Hedonism [9], Behaviorist approaches[10], Maslow's hierarchical model [11], and Viau's model of motivational dynamics [6] that we have adopted in this study.

#### **4.1. Socio-demographic characteristics**

In our study, the gender distribution shows a clear female predominance. This result is not consistent with the current state of medical and paramedical personnel in Morocco, which shows that 60% of doctors are male [12]. The reversal of the sex ratio follows the global trend of feminization of the medical profession. Women now represent a significant and growing proportion of physicians in many countries [13]. In the United Kingdom, the number of female physicians increased by 60% between 1995 and 2005. This change in the demographic composition of the medical community has also been seen in the Netherlands, Norway, Sweden, Finland, Russia, Australia, Canada, and the United States [14, 15, 16]. The massive entry of women into the medical profession can be explained by the weakening of constraints on girls in the school and family institution, as well as by their emancipation. The increasing access of the female gender to higher education [17] has contributed considerably to the mass entry of women into the medical field.

#### **4.2. Source of Motivation: Training and Attraction to Science VS Prestige and Financial Security**

In our study, Motivation scores are overall high among residents. Intrinsic motivation and perceived value of the task are the highest. Extrinsic motivation, which is acting under duress, is the motivational component with the lowest level. They show a high level of interest in the scientific aspect of medical biology. The benefits of being a biologist are outweighed by the appeal of science. The choice of medical biology for prestige was very important for only 10% of the residents. The dimension "Attraction to science" was assigned the highest average. Residents reported that intellectual satisfaction was a very important factor in their choice of specialty 90% of the time. The importance residents place on science and knowledge is the same for both genders.

All the studies we reviewed reported that status benefits were outweighed by other motivational factors such as a desire to help others or an attraction to science [18,19]. However, Wierenga et al [20] and Kutner et al [18] report a significant difference between the two sexes concerning prestige and high income. These studies reported that these two factors seem to attract more male residents.

#### **4.3. The relationship between type and degree of motivation**

Studies conducted on motivation have always focused on assessing the degree or type of motivation. However, a resident could have an acceptable type of motivation, but his or her motivational strength may not be optimal [21]. Motivational strength has been defined as the willingness of residents to start and continue medical school.

In our study, residents were motivated with a mean motivational strength of  $4.01 \pm 0.12$ . There was a significant difference between motivational strength and residency status. Residents with volunteer status expressed higher motivation than their contract colleagues. This may be explained by the high monetary return of a medical laboratory compared to a departmental salary. For some residents, de-motivation may be due to the fact that the salary and allowances for on-call duty do not correspond to the efforts made. This can be the cause of great disappointment, leading to resignation from their commitment to their training, and a decrease in their motivation, especially for contract biologists.

The perception of the importance of teaching is a major cause of demotivation for most residents. They ask for more supervision in the laboratory, the organization of courses and practical workshops more often, but the workload and

In our study, the majority of the residents were satisfied with their choice of medical biology. There is no significant difference between the two sexes regarding satisfaction. This increases the strength of motivation among the residents.

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## **5. Conclusion**

Most residents entered medical biology out of altruism and an interest in the scientific component of the specialty. Commitment to medical biology out of altruism was most prevalent among female students. Autonomous motivation was the predominant type of motivation among residents. The strength of the residents' motivation to continue training

was moderate. The majority of residents were satisfied with their choice of medical biology with a significant decrease in the degree of pride in specialty choice among males.

The improvement in residents' motivational strength is undeniably related to greater support for learner autonomy. Motivation is probably the most important factor that faculty can target to improve learning and training. A better understanding of the determinants and indicators of motivation may go some way to improving resident training.

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## Compliance with ethical standards

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### *Disclosure of conflict of interest*

The authors declare no conflict of interest.

### *Statement of informed consent*

The data collected retrospectively did not contain any personal information.

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