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Influence of Tunisian Revolution on Bullying at Work in Interns and Residents

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Abstract

This study aims to compare prevalence and determinants of workplace bullying, in interns and residents before and after Tunisian revolution and to assess its influence on their quality of life. It was a two-step-cross-sectional study, carried out in 2009 and in 2016, in 547 interns and residents in 2009 and 667 in 2016. The prevalence of workplace bullying decreased significantly ($p < 10^{-3}$) between 2009 (74%) and 2016 (43.6%). It was related to the professional status, gender, seniority, deliberate choice of medicine, satisfaction, serious family problems and hobbies in 2009 while it was related to professional status, nature of specialty, deliberate choice of medical studies and the satisfaction of the practice of Medicine in 2016. Most common acts were similar between both cohorts. Median mental and physical quality of life scores were below the mean baseline scores in both cohorts with no significant difference. Despite decrease in workplace bullying rate between both cohorts, its perception has not changed. Lawful criminalization, raising public awareness to reduce this phenomenon and prevent its negative effects are preventive measures to apply.

Keywords: bullying, quality of life, internship and residency, social changes

1. Introduction

The socio-cultural changes in the modern world as well as the changes in the mediatization contributed to the emergence of the notion of moral harassment at work (MHW). Research about workplace bullying has continued to grow since Scandinavian investigations about school bullying emerged in the late 70s.

Workplace bullying is “a situation in which one or more persons are systematically and over a long period, targeted by repeated, health-harming mistreatment by one or more perpetrators. Person(s) exposed to the mistreatment has (have) difficulty in defending themselves against this treatment” [1]. This is a complex and dynamic notion that is not the subject of a consensual definition despite the growing scientific interest [1–4].

Insidious violence and hostile actions can be grouped in four categories: isolation and refusal of communication, humiliating attitudes or disqualifying remarks in order

to offend human dignity, intimidations aiming at terrorizing the targeted person so that it leads to submission or leave [1].

Health care professionals are highly exposed to MHW and facing the pain and death of patients [5, 6]. Young doctors, interns and residents, are besides obliged to follow a highly demanding apprenticeship. In fact, they live in a state of chronic stress and are subjected to significant mental burden facing the challenge to learn, to work in a team, to become competent, responsible and empathic physicians and at the same time to provide medical services although the hostile atmosphere and in often unfavorable conditions. This kind of heavy occupational atmosphere, promoting the development of MHW, has been highlighted by a previous study conducted in 2009 [7].

Tunisian jasmine revolution, initiated to face critical economic situation, frustration, hopelessness, injustice, corruption and political domination, conducted to a new approach of justice and dignity [8]. It was followed little by little, by the procession of freedom of expression that, sometimes exceeded rights limits.

Otherwise, hospitals' working conditions, within the after revolution, have significantly worsened, due to family patients' violence and lack of equipment, leading to heavy work conditions affecting the medical practice of young doctors and doubly exposing them to harassment at work.

The aims of the study were to:

- Compare the prevalence and the perception of workplace bullying in interns and residents before and after revolution.
- Assess the influence of workplace bullying on their quality of life

2. Methods

2.1 Study design and participants

This is a comparative cross-sectional study, practiced in two stages: 2009 and 2016. The cohort of participants included all interns and medical residents practicing within the teaching hospitals attached to the Faculty of Medicine of Monastir-Tunisia. This current study was based on data of 547 Participants in 2009 and 667 ones in 2016. It took place during approximately the same period in both stages: October and November 2009 and then in October, November and December 2016. Incomplete forms were not included in the study and no participant was excluded. Moreover, even though both studies have been performed in the same places, no overlap between both cohorts was noticed, because 2009 cohort, whether interns or residents, have already finish their curriculum in 2016. Finally, the study was approved by the regional ethical committee.

2.2 Measurements

2.2.1 Data collection

Data on MHW were obtained through the administration of the same anonymous self-administered questionnaire distributed to the target population of 2009 and 2016. A unique investigator distributed the self-questionnaire to all the cohort of interns and residents in hospital departments. He guaranteed to each participant the anonymity and asked him/her to respond as sincerely as possible and trust his immediate reaction rather than a long thoughtful answer.

2.2.2 Outcome variables

a. Socio-professional data: gathering

- Socio-demographic characteristics: age, gender, marital status.
- Occupational characteristics: the professional status, the nature of specialty and seniority at work.
- Environmental characteristics such as number of children, distance between the residence and the workplace, means of transport, heavy family problems, hobbies and sports activities, work satisfaction.
- Alcohol-smoking habits

b. Workplace bullying:

It was assessed through the Negative Acts Questionnaire Revised or NAQ-R, which is a standardized self-questionnaire, made of 22 items. None of them is directly referring to harassment. Many practical and scientific studies have concluded to its validity and reliability on evaluating this phenomenon. It has also been validated in several countries of the world as a standardized instrument for assessment of moral harassment at work [9–11].

Each kind of behavior is increasingly leveled from 1 to 5 depending on the repetition of this act in the last six months: never, sometimes, once a month, once a week, and daily.

Negative acts mentioned were gathered in two types of behaviors: People-related behaviors and Work-related behaviors.

A person is considered to be a victim of psychological harassment if he or she has been suffering of any of these acts at least once per week in the last six months.

This self-questionnaire also helps to identify the most widespread negative act in a workplace.

At the end of this self-questionnaire, there is a 23rd question preceded by a definition of “mobbing” at work. It is interested in harassment at work as generally perceived by the person. The term harassment has been replaced by the term “mobbing at work”.

Mobbing at work was defined as “a situation where one or more people perceive themselves as the target of negative acts from one or more people over a long period of time and have difficulties in defending themselves against these people (a single incident is not regarded as “mobbing”).

We chose to use the NAQ-R score as a dependent continuous variable.

c. The Quality of Life Impact:

The SF8 ‘health survey’ scale is a standardized and valid self-questionnaire that explores health and well-being of persons [12, 13]. We got the license of the Quality Metric Office of Grants and Scholarly Research, number QM038831 [14].

It contains eight questions exploring the following dimensions: Health as perceived by the subject, repercussion of physical health on daily activities, pain, physical activity, vitality, social activity, psychic health, repercussions of mental health on daily activities.

It allows to calculate two scores using a specialized software: the overall physical score (PCS: physical component score), which is the average of the first four

sections; and the overall mental score (MCS: Mental component score) which is the average of the last four items.

These two scores range from 0 (the worst health state) to 100 (the more favorable state of health). The score 50 represents the average score or the standard of American population.

2.3 The statistical study

The results were analyzed with the SPSS software version 21. The univariate comparative study was conducted using cross-tabulations with the chi-square test for comparison of discontinuous variables and T-student test to establish the difference in averages between both populations. Verification of the normality of both quantitative variables PCS and MCS was made. The threshold of significance has been set at 0.05.

Multi-varied analysis was performed using binary logistic regression multi-varied step-by-step to identify variables that are related significantly to harassment at work, regardless of the other variables respectively in 2009 and 2016, with a risk taken at 0.05. The criterion for including independent variables in the regression model was a threshold of significance <0.2 .

Results of both cohorts were presented in chronological order (2009/2016).

3. Results

3.1 Descriptive and comparative study of socio-professional and demographic data of both cohorts

In 2009, the study was conducted among 547 participants (218 interns and 113 residents) working in Monastir and Mahdia teaching hospitals with a total response rate of 60.5%. In 2016, the study was conducted among 667 participants (215 interns and 120 residents) in the same teaching hospitals with a global response rate of 50.22%. No significant statistical difference in response rates was noticed between both stages of the study.

The respective specific response rates scheduled according to the chronological progress of the study showed that the interns response rates were about 62.8% in 2009 and 58.74% in 2016 while residents ones were respectively 50.1% and 39.86%.

3.1.1 Socio-demographic and occupational characteristics

Both populations were statistically comparable in all their sociodemographic and occupational characteristics in both cohorts.

In addition, the participation rates of interns were higher than those of residents (62.8%/62.1%) and the majority of people interviewed were working in medical services in both cohorts (**Table 1**).

3.1.2 Environmental characteristics

a. Family characteristics

Most of participants had no children in 2009 and 2016 Cohorts (90.9%/87.5%). However, 2016 interns and residents were significantly more plaintive about serious family problems ($p < 10^{-3}$) (**Table 1**).

Environmental characteristics		2009 Cohort	2016 cohort	P
Professional status (%)	Interns	65.9	64.2	NS
	Residents	34.12	35.8	
Specialty (%)	Medical	62.8	62.1	0.04
	Surgical	35.4	37.9	
	Fundamental	1.8	0	
Children Number: (N)	0	90.9	87.5	<10.3
	1	9.1	12.5	
Serious Families Problems: (%)	yes	11.2	46.6	NS
	No	88.8	53.4	
Means of transport: (%)	On foot	30.9	31.9	<10.3
	bicycle	3.9	0.9	
	car	32.6	31.6	
	Public transport	32.6	35.6	
Leisure activities: (%)	Never	42	46.5	NS
	Rarely	48	33.5	
	Always	10	20	
Smoking: (%)	Yes	22.7	17.9	NS
	No	77.3	82.1	
Alcohol:	Yes	13.9	13.1	NS
	No	86.1	86.9	
Career choice	Yes	78.9	85.4	0.018
	No	21.1	14.6	
Practice expectation satisfaction:	Yes	41.4	41.8	NS
	No	58.6	58.2	

Table 1.
Distribution of both cohorts according to environmental and occupational characteristics.

b. Accessibility to workplace

The daily average distance to attend workplace was statistically higher in 2016 cohort ($p = 0.012$).

All means of transport (moving on foot, by car and public transport) were equivalently used in both cohorts ($p = 0.075$) (**Table 1**).

c. Sports activities and hobbies:

On one hand, participants in both cohorts complained about the lack of time to practice leisure activities (90%; 80%). On the other hand, the leisure activity practicing rate has significantly doubled, between 2009 (10%) and 2016 (20%). ($p < 10^{-3}$) (**Table 1**).

d. Alcohol-smoking habits

Both study cohorts showed no significant difference neither in smoking habit ($p = 0.07$) nor in alcohol consumption ($p = 0.43$) (**Table 1**).

e. Satisfaction with the choice of medical curriculum and expectations of the practice of Medicine

The rate of students who deliberately chose to lead a medical career has significantly increased between 2009 (78.9%) and 2016 (85.4%) ($p = 0.01$).

However, there was no significant difference between both cohorts in satisfaction with medical practicing expectations (**Table 1**).

3.2 Analytical study of the determinants of workplace bullying in both cohorts

3.2.1 Univariate analysis of 2009 cohort

Workplace bullying was significantly linked to younger age ($p = <10^{-3}$), occupational status of intern ($p = <10^{-3}$), surgical specialties ($p = 0.046$), shorter seniority at work ($p = 0.003$), serious family problems ($p = 0.001$), as well as to disappointing medical practice ($p < 10^{-3}$).

All the remaining socio-demographic, occupational or environmental features had no significant relationship with bullying at work in interns and residents in 2009 (**Table 2**).

Characteristics	2009 cohort			2016 cohort		
	p	OR	IC _{95%}	p	OR	IC _{95%}
Age (Younger)	$< 10^{-3}$			0.00		
Gender (Female)	0.08			NS		
Marital status	NS					
Occupational Status (Intern)	$< 10^{-3}$	0.3	[0.1–0.5]	NS	0.3	[0.24–0.6]
Specialty (Surgery)	0.04	0.14	[0.03–0.6]		1.7	[1.1–2.7]
Seniority (Shorter)	0.00			0.016		
Children (N)	NS			0.004		
Serious Family Problems	0.00			NS		
Distance to work(km)	NS			NS		
Public Means of transport	0.05			NS		
Leisure activities	0.17			NS		
No Smoking	NS			NS		
No Alcohol	NS					
Medical curriculum choice	NS					
Medical practice	$< 10^{-3}$	2.5	[1.52–4.16]	$< 10^{-3}$		
Satisfaction				$< 10^{-3}$		

Table 2.
Univariate analysis of determinants of work bullying in both cohorts.

3.2.2 Multivariate analysis of 2009 cohort

After binary logistic regression, the determinant model influencing the advent of MHW was made of intern job position ($p < 10^{-3}$), female gender ($p < 10^{-3}$), shorter seniority ($p = 0.02$), the deliberate choice of medical career ($p < 10^{-3}$), dissatisfaction with medical practice ($p < 10^{-3}$), serious family problems ($p < 10^{-3}$) and lack of leisure activities ($p = 0.01$) (**Table 3**).

3.2.3 Univariate analysis of 2016 cohort

In 2016, workplace bullying was significantly related to younger age ($p = 0.003$), to the internship status ($p = <10^{-3}$), to surgical specialties ($p = 0.046$), to a shorter seniority at work ($p = 0.004$), to the use of public transport ($p = 0.016$), to compulsory choice of medical curriculum ($p < 10^{-3}$) as well as to disappointing medical practice ($p < 10^{-3}$) (**Table 2**).

All the remaining socio-demographic, occupational or environmental features had no significant relationship with bullying at work in interns and residents in 2016.

3.2.4 Multivariate analysis of 2016 cohort

The binary logistic regression showed an explanatory model of the moral harassment at work for 2016 Cohort consisting of job position ($p = 0.008$), specialty ($p = 0.031$), deliberate choice of medical studies ($p < 10^{-3}$) and Medical practice dissatisfaction ($p < 10^{-3}$) (**Table 4**).

3.2.5 Comparison of both cohorts' scores

Comparison of the NAQ-R scores between 2009 and 2016 showed that it was significantly higher in 2009 score, while no difference was noticed in bullying scores between both cohorts (**Table 5**).

Determinants	P
Job Position (Intern)	<10 ⁻³
Gender (Female)	0.001
Seniority (Shorter)	0.023
Choice (Compulsory)	0.006
Medical Practice (Disappointing)	0.002
Family Problems (Serious)	0.007
Leisure Activities (Lack)	0.011

Table 3.
 Multivariate model of moral harassment at work in 2009 cohort.

Determinants	P
Job position (intern)	0.008
Specialty (Surgery)	0.031
Choice (Compulsory)	< 10 ⁻³
Medical Practice (Disappointing)	< 10 ⁻³

Table 4.
 Multivariate model explaining workplace bullying in 2016 cohort.

NAQ results		2009 Cohort		2016 cohort		p
		N	%	N	%	
NAQ-R	Harassed	245	74	146	43.6	<10 ⁻³
	Not harassed	86	26	189	56.4	
Mobbing	Yes	23	6.9	17	5.1	0.19
	No	308	93.1	318	94.9	

Table 5.
Comparison of both cohorts' NAQ-R scores.

3.3 Impact of MHW on the quality of life

3.3.1 Mental health score (MCS)

The median MCS was 40.3 ± 12 in 2009 and 40.61 ± 13.48 in 2016. No significant difference was recorded for the MCS. However, the majority of respondents had a mental health score below the standard of 50 in 2009 Cohort (86.1%) as well in 2016 Cohort (84.8%).

Univariate regression showed that workplace bullying influenced the mental quality of mental life significantly in 2009 ($p < 10^{-3}$, $SD = [2.63; 7.06]$) as well as in 2016 ($p < 10^{-3}$, $SD = [3.14, 7.04]$).

3.3.2 Physical health score (PCS)

The median score for the PSC was 45.6 ± 11.72 in 2009 and 45.36 ± 11.09 in 2016 with no statistically significant difference between both cohorts.

In 2009 Cohort as well as in 2016 one, the majority of participants had comparable PSC < 50 (69.8%/72%) with no significant difference.

Univariate regression showed that workplace bullying had significantly influenced the physical quality of life in 2009 ($p = 0.013$, $SD = [0.49; 4.2]$) and in 2016 ($p = 0.004$, $SD = [0.86, 4.37]$).

4. Discussion

The present survey showed that, according to the objective criteria of NAQ-R, prevalence of bullying at work in interns and residents attached to the faculty of Medicine of Monastir has significantly decreased between 2009 and 2016. However, according to the last item of NAQ-R about subjective criteria, the rate perception of workplace bullying was similar in 2009 and 2016, consequently, in both cohorts, young doctors do not seem to recognize themselves as victims of moral harassment.

As for the quality of life, no significant differences were found, between both cohorts concerning the mental and physical plans. However, both populations medians were below the American standard of 50 and participants' scores of mental and physical qualities of life have been significantly altered because of MHW in both cohorts.

The concept of moral harassment was gradually introduced in mid-80s by Norwegian and Swedish occupational psychologists such as Leymann and Einarsen [3, 15].

The presence of certain characteristics or criteria is required by the most researchers such as the persistence of negative acts (for at least six months), repetition (for example at least once a week) and notion of "Imbalance of power"

between the generator of harassment and the victim. Moreover, several authors have also incorporated into their definitions the adverse effects of this phenomenon on victims, including psychological effects [2, 3, 10, 16–20].

As for Mobbing, it has been defined by Leymann [21] as a process of harassment of a victim by one or more persecutors as a result of ordinary conflict. This is a repeated process over a long period based on words, gestures, writings, of such a nature as to affect the personality, dignity or the physical or psychic integrity of the other.

In the present survey, we have opted for the adoption of the same measurement tool (NAQ-R) and the same definition of MHW for both cohorts, but despite this comparability, our survey showed that prevalence of bullying at work in interns and residents has significantly decreased between 2009 and 2016.

2011's Tunisian revolution, with the accompanying socio-cultural changes, such as freedom of expression procession, the creation of the Tunisian Association of Young doctors, a representative union organization of interns and residents founded in December 2016, the media coverage of violence against interns and residents on social networks, seem to be responsible, at least in a part, for this decline in the prevalence of MHW.

The same phenomenon has been observed other where, such as Europe, where the prevalence of MHW decreased from 30% in 2003 to 15% in 2011 [2, 22].

Despite the cultural and social evolution, moral harassment at work is still unknown in Tunisia, and up to now, there are no laws incriminating this phenomenon.

In the literature, studies carried out among health personnel based on the NAQ-R, report figures ranging from 8 to 32% [23–30].

Physicians are at a high risk of workplace bullying. Indeed, they are in direct contact with the patients, with their pain, suffering and death, with their parents and families, and they assume all legal responsibility in case of safety care incident [5, 6].

Furthermore, Medicine is a very hierarchical profession where medical trainees, interns and residents are at the bottom of curriculum and represent the basis of patients' medical care especially in university hospitals. They are, therefore, more exposed to different types of negative behaviors and bullying.

Taking into account, the lack of staff, the lack of equipment, the lack of autonomy, the lack of teamwork, support and feedback and the dependence on seniors' opinions, it is easy understandable that all these factors of stress and frustration lead to the emergence of different negative acts of MHW [31, 32]. This can explain the high prevalence of bullying at work among young doctors and medical students in comparison with the general population and other health professions [33].

The present study showed that the most widespread negative acts were identical between both cohorts of 2009 and 2016.

However, some negative acts such as switching key activities by tasks below the skills and by mundane or unpleasant activities have significantly increased in 2016 while others have significantly decreased, such as putting pressure on young doctors not to claim their rights like vacations, maternity and sick leave.

Since 2011, Tunisian country has been facing many socio-economic problems [34]. In fact, teaching hospitals are concerned with an increasing deterioration of work conditions especially perceived by young doctors. The lack of autonomy, the progressive installation of a culture of mediocrity lead, on one hand, to the proliferation of the private sector at the expense of the public one, and to a mass brain drain of Tunisian medical skills to foreign countries on the other hand; these factors had bad consequences on our health care system [35].

Nevertheless, even in countries where socio-economic stability is the rule, dissatisfaction with the work conditions is reported [36].

The insufficient number of doctors and staff to deal with growing number of patients and a growing demand for care, has been reported as the origin of MHW

among nurses in Japan [23], South Korea [28], the United Kingdom [24] and violence in hospitals in India [37].

Excessive supervision of work was another type of negative acts, frequently reported by interns and residents in both cohorts. It was also one of the most reported negative acts by young doctors in the United States in 2015 (44%) [38].

The socio-cultural changes, arising after Tunisian revolution, allowed young people to challenge some department heads' unfair decisions and to claim their rights [39].

Besides, the negative act relating to the deliberate ignorance of opinions or points of view were common among trainee physicians [40–42] as well as among healthcare givers [43]. Such inappropriate behavior can interfere with the relationship and create a hostile environment that can negatively influence work.

A meta-analysis published in 2014, 51 studies about MHW and discrimination in medical trainees [44] has shown that the most common negative act was verbal abuse (3–28%) and racial and gender discrimination (4–19%). The same respective types of discrimination, in addition to religious one, were reported in medical students in Saudi Arabia [45].

Contrary to our study, several other studies conducted among practicing physicians and those in the process of training showed, that verbal abuse was a widespread behavior [33, 38, 42, 45–49]. This type of act could lead to depressive symptoms among medical students [50].

Even though it was rare in the present study, humiliation is a negative act of MHW and has been found to be common in multiple studies conducted among physicians in training courses and health personnel [24, 38, 41, 51–54].

Moreover, physical violence in hospitals was the least negative act reported in some harassment investigations among young doctors [40, 44, 48] and it did not significantly increase between 2009 and 2016 in our study.

As for the perception of workplace bullying in the present study, young doctors in both cohorts, do not seem to recognize themselves as victims of moral harassment whereas the prevalence of perceived MHW in the literature is varying from 27–52% [38, 47, 55–57].

It seems that, humiliation and offense resulting from the recognition of themselves as harassed, refer to a lower position, weakness and passivity leading to the deny of MHW by victims. Besides, victims of harassment do not want to be confronted with this truth thinking that it is their own fault [58] or that of the organization in which they work and rather than stalker's one [59]. Others believe that recognizing victim status especially during their temporary internships will call their professional future into question [46, 60, 61].

As for identified determinants of moral harassment at work in our study, the job position of intern, the deliberate choice of medical studies and the dissatisfaction with the medical practice were the common determinants in both cohorts.

Serious family problems, seniority and the lack of leisure time were also apart from the explanatory model of 2009, while the nature of specialty was an additional determinant in 2016.

Generally, young age is correlated with MHW among medical trainees because of their vulnerability to stress and their sensitivity to criticism [62].

Female gender was not a determinant of harassment in both studies, but it persisted after multiple logistic regression in 2009. It would seem therefore, that gender discrimination among young doctors decreased after the socio-cultural changes of the last 8 years.

In the literature, women in the general work field, with their tendency to vulnerability, are the most exposed to harassment [24, 26, 38, 41, 63, 64] unlike men who are predominant in management positions and consequently mostly stalkers [16, 47, 65].

In addition, in the medical sector, women face many difficulties to reconcile professional and private life [66].

Dealing with the occupational determinants, in our study, a lower seniority was a predisposing factor to the MHW in 2009. The youngest doctors are those with shortest seniority and therefore the most vulnerable to MHW.

Being intern, as young trainee, was also a risk factor for bullying in both cohorts. In fact, interns are located at the bottom of the medical professional hierarchy, and are consequently exposed to a high level of stress because of a low autonomy and a high level of requirement. Thus, interns are more predisposed to workplace bullying [31, 41, 62].

On another side, surgical specialty was a determining factor of bullying in 2016 cohort while it appears to have been a confounding factor in the 2009 Cohort.

Surgery is a specialty that requires strength and toughness, which leads to some negative acts of harassment and explain our results.

In the literature, some specialties with heavy workload and ubiquitous stress predispose more than others to MHW in the healthcare givers. Gynecological obstetrics specialty has been predictive of a high rate of MHW among residents in Mexico [67].

Finally, verbal aggression among doctors in the United States has been more important in the specialties of interventional radiology and in general surgery unlike pediatrics [48].

Regarding the dissatisfaction with the work practice, it was significantly related to moral harassment score according to NAQ-R in both cohorts. Job satisfaction, as it has been defined by Locke [68], is an affective and emotional response of a person in face of a work situation resulting from the match between what the person wants (his expectations) and what he/she gets out of his/her job. Thus, dissatisfaction can contribute to emotional exhaustion, mental and physical weariness of professionals and then the desire to leave the profession [49, 68, 69].

In the literature some determinants are probably risk factors for harassment. Indeed, some changes in workplace such as diversification, staff management changes, downsizing, salary reductions or increasing working time and even the dimensions of locals can cause conflicts and influence negatively on the job which can explain the high level of MHW in a hospital [27, 70, 71].

In addition, several organizational determinants influence considerably the level of harassment in these environments, such as management of work (too authoritarian or too passive), conditions (insecurity at work) and work dynamics (workload, cognitive demand, abuse of power, interpersonal conflict), the constraints of time and cultural norms (commoditization of the bullying as a Performance tool) within a workplace [72, 73].

In Tunisia, the new democratic transition has contributed to the emergence of violence in the country following the appearance of religious extremists' groups, the accentuation forms of racial and sexual discrimination and violence in some protests against the government [74]. So, the mediatization of the incredible increase of violence against hospital doctors since 2011 in Tunisia could be also factors contributing to and trivialize harassment in hospitals.

The compulsory choice of Medical curriculum was another determinant factor in genesis of MHW among young doctors after logistic regression both in 2009 and 2016.

Young doctors whose medical career was not initiated by a personal choice were unhappy and frustrated with their studies and more exposed to the harassment because they are more vulnerable to negative acts.

On the other side, the satisfaction of choosing a medical career has significantly increased in 2016 compared to 2009. This could be explained a wider autonomy in the career choices for Tunisian bachelors since 2011, and by broadening the residency prospects of trainees, in fact residency positions have almost doubled since 2009.

As for the impact of bullying on participants' quality of life, it significantly influenced the quality of mental life regardless of the study cohort, but no significant difference was found between 2009 and 2016 and most of scores were below the standard average of 50.

Despite the decline in the rate of MHW in 2016, the quality of mental life did not change after the revolution. This may be related to other factors than the MHW upon which social or managerial factors, working conditions, work-family interface quality, social support, marital status and income ... [75, 76].

In the latest study conducted by 'Word Happiness' in 2017 regarding the satisfaction of life and happiness based on certain criteria such as health, social support, freedom and corruption, Tunisia was among the lowest ranked countries (rank of 102 out of 155 countries) [77].

The alteration of interns and resident mental quality of life can be also attributed to the fact that the internship is a period of chronic stress for young doctors who face the challenge of learning to work as a team, to become competent, responsible and empathic doctors and at the same time ensuring the best medical benefits in a sometimes competitive and even hostile climate.

The influence of MHW on the mental quality of life has been demonstrated in literature both in the general population [77, 78] and in the health caregivers [78, 79] and some authors assert that mental disorders are also predictors of harassment [79–81].

If we consider, the influence of MHW on the quality of physical life, the latter significantly altered the physical quality of life in both cohorts without significant difference between them and scores were below the American standard of 50.

In the literature, MHW has deleterious effects on physical health. It increased cardiovascular risk and caused musculoskeletal pain in addition to other medical problems [62, 73].

The new scheme of residency ship, consisting in pending months from June to December with long periods of preparation, leads to inactivity, and spending most of the day on screen and desk could explain the lack of improvement in the quality of physical life despite the significant increase in leisure time and the regression of the MHW in 2016 comparatively to 2009.

Considering the limits of our study, despite the decrease in the participation rate in 2016, the sample of the studied population remains representative of the general population. Some factors could influence the participation rate in both cohorts: some of the interns and residents were unmotivated, others could not answer our questionnaire due to lack of time and excessive workload. Many of them also found that the questionnaire was too long. The lower participation rate of residents compared to interns' one can be explained by their heavier workloads. Finally, the abstention of some participants can also be explained by the perception of MHW as a taboo subject or lack of conviction of the usefulness of such investigations.

The rate of participation in workplace bullying investigations among young physicians in literature varied between 22.1 and 72% [40, 41, 55, 63, 82].

Regarding the used tools, the NAQ and the SF8 are both validated and frequently used in different professional sectors and in various languages. But, due to the absence of a validated version in Tunisian dialect or in Arabic, we opted for the use of the French validated version which is commonly understandable by our study population because all medical studies are performed in French in Tunisia.

However, the disadvantage of the NAQ-R is that it asks a direct question at the end, about the self-perception of moral harassment. The respondents tend to deny this suffering, either out of shame or lack of motivation or unconscious denial of reality. This could be the cause of underestimation of results.

As for the quality of life, the SF8 provides a simple method for evaluating general mental and physical health; it has the advantage to be a brief and a valid questionnaire.

5. Conclusion

Health care professions, especially in young doctors, are at high-risk of moral harassment, due to required interactions with patients and their parents, requested performance of learning and the advent of violence against healthcare professionals after Tunisian revolution. The present study showed that MHW had significantly decreased in 2016 according to the objective assessment by NAQ-R score. No significant difference between both cohorts perception of MHW was shown which can be explained by the lack of awareness of this phenomenon and by the absence of Tunisian legislation against harassment.

The determinants of the MHW in 2009 were the job position, gender, and seniority, choice of medicine satisfaction, serious family problems and leisure activities; while in 2016, they were the job position, the specialty nature, the choice of medical studies and the satisfaction of the exercise of Medicine. Finally, MHW negatively influenced the quality of mental and physical life in a comparable way in the two steps of investigation.

The promulgation of a law penalizing the MHW has become urgent especially after the revisions of the post revolution law texts. Politicians should focus on this major issue because MHW has many bad effects on the personal, social and organizational level. It is also important to set up training and awareness programs about MHW to prevent its emergence and reduce its deleterious effects.

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