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SARS-COV2 EFFECT :
Audit of the Prevalence and Incidence Factors of Burnout among Education Inspectors during the COVD-19 Pandemic

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Abstract:- Historically, pandemics have always caused mental disorders and physical distress among the population. SARS-COV2 is no exception. It has invaded all public and private spheres. The education system has not been spared by this scourge either. Through its multiplying, mutating, uncertain and devastating aspect, COVID has become anxiety-provoking for educational staff, especially inspectors. The SARS-COV2 EFFECT study is a preliminary assessment (conducted over four months in April and May 2020, and in February and March 2021) of the perception by education inspectors (EIs) of the disruption of their professional activity during the pandemic, and of its consequences on their physical and mental health. The survey was carried out by means of a self-administered questionnaire administered to a sample of 113 inspectors (IEs). Although burnout syndrome has been widely studied and documented internationally, there are very few studies that address its prevalence and impact among EIs, especially in the midst of the COVID19. Educational inspection is a stressful profession that may predispose inspectors to burnout. The repeated stopping and resuming of school classes has altered both students' schooling and inspectors' professional tasks. The improvised and urgent recourse to distance learning has been a source of destabilization for students, their parents, teaching staff, and EIs alike. The rearrangement of schedules and working conditions generated additional physical fatigue for 59% of EIs. Psychological and moral exhaustion was reported by 32% of inspectors. This was underpinned first and foremost by the stress of contracting Covid (77%), the fear of a vital risk (35%), but above all of transmitting it to their relatives (81%). This stress affects all socio-professional categories in the inspection, regardless of exposure to COVID. Organizational changes, the lack of visibility, information deficit as well as inadequate protective equipment were major factors of insecurity, especially in the first months of the pandemic. After containment, occupational stress did not diminish despite the significant decrease in infected cases and the drop in mortality due to COVID. On the other hand, the vaccination campaign undertaken very early and in priority in the education sector brought relief and a considerable reduction in stress, without however disappearing. Work on emergency measures, support and health crisis management in education is more than necessary. It should target the dissemination of information, mainly to those most at risk, as well as providing wider psychological or material support to inspectors.

Keywords:- *Burnout, COVID19, Factors and Effects of Burnout, Education Inspector, Crisis Management in Education.*

I. INTRODUCTION

In Morocco, while many studies have been conducted to assess levels of stress and burnout in teaching, hardly any studies have focused on education inspectors (EIs) in particular. Yet EIs are known to be particularly prone to stressful work situations that can lead to burnout.

The outbreak of the Coronavirus in Morocco imposed de facto a severe lockdown on 20 March 2020, and measures[1] of sanitary emergency were quickly decreed[2]. Indeed, from the beginning of the pandemic, the Moroccan State operated in emergency - precautionary mode. It chose to give priority to life over the economy. Thus, the management of the epidemic was exemplary and praised by many countries. Its reactivity and sense of inventiveness, which it displayed in the manufacture of masks, hydro-alcoholic solvents and artificial breathing apparatuses, are remarkable. The country has quickly taken preventive decisions that are at stage 2 or 3 while it was only at stage 1. But the primacy of life over the economy has a price that is very heavy and spreads a stressful climate.The range of measures and requirements adopted in the educational system merely exacerbates the anguish of students, parents and educational staff alike. Through its multiplying, mutating, uncertain and devastating aspect, COVID19 has become anxiety-provoking for EIs, with potential consequences for their physical and mental health. Hence the need to determine the effect of COVID19 on EIs in particular, and to study the causes and consequences of their predisposition to burnout during the COVD-19 pandemic.

[1] The measures implemented include closure of borders, creation of a special fund for the management of the epidemic (Decree No. 2-20-269 of March 16th 2020), establishment of an Economic Watch Committee, granting aid to companies such as "Damane Oxygen", and lump-sum compensation from the National Social Security Fund (CNSS) for employees, launching of screening campaigns (PCR tests) limitation of travel and circulation between cities and regions, night-time curfew, closure of mosques, cinemas and theatres, restriction of restaurants and cafés to take-away orders, implementation of barrier measures (compulsory wearing of masks, use of hydroalcoholic gel, social distancing), reorganisation of the school schedule, and encouraging distance learning...

[2] Decree-law n°2-20-292 of March 23rd 2020 relating to the statement of the health emergency and decree n°2-20-293 of March 24rd 2020 which regulates it to contain the Covid-19 epidemic.

Aims of study

Little or nothing is known about the prominence, causes and consequences of Burnout Syndrome among the specific population of education inspectors in Morocco, especially in the time of COVID. Our study attempts to audit the prevalence and incidence of burnout with EIs in Morocco during pandemic, to determine the physical and psychological effects of COVID19 on EIs and to identify associated psycho-organisational factors, with a view to defining preventive rather than curative strategies.

II. LITERATURE REVIEW

A. Burnout or professional exhaustion syndrome (PES)

a- Burnout definitions and approaches

In management, "buzzwords" or "catchwords" such as burnout are both complex and fashionable. They are used by many authors and in several sectors of activity. We must therefore be careful not to oversimplify or define them in any way. Etymologically, "To burn out" literally means to extinguish, to combust, to consume, to grill to the end...[1] or to fail, to wear out, to empty, to become exhausted in the face of too great a demand on energy, strength and resources [2]. This concept was first mentioned by Bradley [3] to designate a stage of physical, emotional and mental exhaustion linked to a deterioration in a person's relationship with his or her job. However, the authorship of the term " burn-out" is attributed to Herbert Freudenberger, who was the first to introduce it in the United States in 1970 [4]. Throughout the 1970s, burnout was not studied as a theoretical problem, but as a social problem. Its French equivalent is professional exhaustion and we will use the two terms interchangeably during this study.

The first theoretical reflections on burnout appeared a few years later with the articles by Freudenberger [5] and Maslach [6]. From then on, two relatively separate currents studied this phenomenon: the clinical approach and the empirical approach. The first, in which individual factors are predominant, is based essentially on observations and clinical descriptions made by practitioners [7]. The second research approach, mainly composed of authors from social and/or organizational psychology, has focused principally on the interpersonal aspects of burnout [8], as well as on factors related to the workplace environment [9].

Burnout, also referred to as burnout syndrome (BS), combines profound fatigue, disinvestment in work, and a feeling of failure and professional incompetence [10]. It is considered to be the result of chronic professional stress: the person, not being able to cope with the adaptive requirements of his professional environment, finds his energy, motivation and self-esteem declining.

In terms of definiton, almost all the researches on burnout refer to the definition of Maslach and Jackson [8], making this conception the dominant and almost exclusive model [7]. For them, burnout is a three-dimensional syndrome composed of emotional exhaustion, depersonalization and reduced personal accomplishment. Emotional exhaustion describes an individual whose emotional resources are exhausted and dried up, who has no more energy, feels physically and psychologically tired, feels nervously drained, lacks motivation and drive at work, everything is difficult and insurmountable, no longer feels pleasure in his or her work, and his or her work becomes a source of frustration and tension. Depersonalization refers to the interpersonal aspects of burnout, the individual becomes cynical, indolent and insensitive, developing impersonal, dehumanized, detached and negative attitudes, even contemptuous towards those he treats more like things. Finally, the reduction of personal accomplishment expresses the fact that the individual devalues his work and skills, depreciates himself, judges himself incompetent and useless, convinced that he is unable to fulfill the expectations of his entourage, and feels guilty, irritated and demotivated [11].

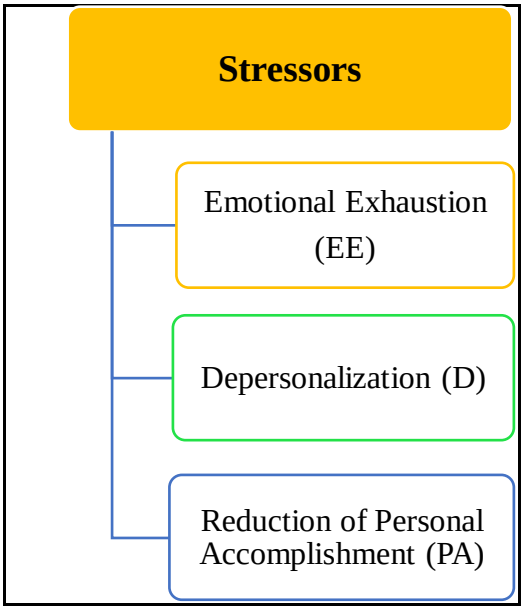

FIG. 1. THE THREE DIMENSIONS OF BURNOUT ACCORDING TO MASLACH AND JACKSON (1981).

If emotional exhaustion is the affective component of burnout, then reduced personal accomplishment represents the cognitive variables of burnout. While depersonalization reflects the attitudinal components of burnout. It corresponds to a defensive reaction, or a refuge from emotional exhaustion, and leads to a break with the ideal that the professional has of his or her practice, which results in the loss of personal accomplishment.

The description of these three fundamental dimensions later allowed the recognition of the burnout syndrome and its psychodynamic aspect and constituted the basis for the construction of the "Maslach Burnout Inventory" (MBI) assessment scale [8].

b- Synthesis of the literature review on burnout

Nowadays, even if burnout is a widely mediatized phenomenon, it is still understudied. The first publications referring to "burnout" appeared in the 1970s [5, 6]. Scientifically, many researchers, mainly from the fields of social and organizational psychology, specialized in the study of this phenomenon, and the vast majority of research focused

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on the antecedents of burnout in the work environment (under- and/or overwork, social support, working conditions, not participating in decision making, hierarchical support, etc.) [12-16]. It is not interested in individual factors (over-investment in work, workaholism, presence of high neuroticism, tendency to perfectionism, propensity to hyperactivity, level of education and training, marital status). [17-20], and even less to managerial inductors (moral pressure and harassment, roles ambiguity, interpersonal conflicts, organizational or interpersonal injustice, informational justice[3] [21-24]. However, despite the impressive number of studies and the consistency of the links between professional stressors and burnout, the results of the studies that have explored these relationships do not allow us to understand why the symptoms and levels of burnout manifested by professionals in the same organization can be very different from one individual to another. They therefore assume that individual factors would most likely contribute differently to the emergence of burnout [25-27].

In this sense, studies have therefore focused on individual characteristics, seeking to understand why, in a given environment, some professionals report a high rate of "burnout", while others, working in similar conditions, are only slightly, moderately or not at all affected [28,29]. Thus, some studies have examined demographic characteristics (sex, age, level of education, marital status, etc.) [28, 30, 31], while others have focused on psychological factors, in particular dispositions related to personality traits [32-35], as well as on coping strategies used by individuals to adapt to the stressful exigencies of work [36, 37], and on sleep disorders, frequently reported by burned-out individuals [38].

Nevertheless, all researches on burnout have focused on these different factors independently of each other, and very few have assessed them simultaneously or in a multifactorial and integrative way [39]. Moreover, the work that has specifically explored the contribution of individual psychological characteristics to burnout has mainly examined general personality dimensions. Consequently, the analysis of the cognitive and affective processes involved in burnout is still very limited. We believe that the study of burnout in inspection should not be limited to a fragmented analysis of work environment variables (internal, external and social environment), individual demographic variables (age, sex, marital status, seniority, experience,training, skills, etc.) or psychological variables (feelings, motivation, representation, emotion, attitude, etc.), but to analyze them in a systemic and simultaneous manner by integrating both the collective dimensions of the inspection (interpersonal relations, educational management, educational leadership...) and the macro-environmental variables, namely political, economic, social, technological, ecological and legislative factors: The burnout syndrome (BS) has a multifactorial and multi-determined character. All these variables and dimensions cover eclectic and heterogeneous registers: psychology, sociology, educational sciences and management sciences.

c- Burnout measurement scales

Numerous measurement scales have been developed to assess burnout [40]: Jones' *Staff Burnout Scale* (SBS), Appelbaum's *Individual Burnout Symptomatic Questionnaire* (IBSQ), Freudenberger and Richelson's *Burnout Questionnaire* (BQ), *Emener-Luck Burnout Scale* (ELBS), *Job Burnout Inventory* (JBI), *Meier Burnout Assessment* (MBA), Garden's *Energy Depletion Index* (EDI), *Cherniss Burnout Measure* (CBM), *Matthews Burnout Scale for Employees* (MBSE), Seidman and Zager's *Teacher Burnout Scale* (TBS), *Boudreau Burnout Questionnaire* (BBQ), *Bergen Burnout Inventory* (BBI), *Spanish Burnout Inventory* (SBI), *Personal Work Style* (PWS)...

Nevertheless, all these instruments were only secondary and without much scientific significance. Due to the number of publications referenced, research recognizes only seven major scales for measuring burnout :
- The *Maslach Burnout Inventory* (MBI) [8], which is the most widely used in scientific research and undisputedly dominates burnout psychometrics [7,37). It is the basis for the design of all the other following measurement tools ;
- The *Copenhagen Burnout Inventory* (CBI) [41] ;
- The *Oldenburg Burnout Inventory* (OLBI) [42];
- The *Burnout Measure* (BM), originally called the *Tedium Measure* [43, 44];
- The *Spanish Burnout Inventory* (SBI) [45] ;
- The *Personal Work Style* (PWS) [46]; and
- The *Shirom Melamed Burnout Measure* (SMBM) [47].

Maslach Burnout Inventory (MBI) by Maslach and Jackson [8]

They were the first to develop an instrument to measure the level of burnout, which probably contributed to the success of their approach. This scale, like the definition of burnout proposed by these authors, is based on an inductive approach. It is therefore not based on a purely theoretical construction, but on clinical research and empirical analyses of variables representing physical, emotional, attitudinal, behavioural and cognitive manifestations.

The first version of the MBI, the *MBI Human Services Survey* (MBI-HSS), is intended for helping service professionals. It reflects the authors' initial conception of the exclusively interpersonal nature of burnout. Different versions of this first scale were subsequently adapted to allow for the assessment of burnout in all professional categories. Thus, there are currently at least three versions, the *MBI Educators Survey* (MBI-ES) [48], used for the education and training sector, the *MBI General Survey* (MBI-GS), which can be used in all professions [48], and the *Student Burnout Inventory* (SBI) [49], exclusively for students. The factorial validity of these three versions of the MBI (MBI-ES, MBI-GS and SBI) has been widely established [7, 49,50].

[3] Informational justice refers to the quantity, quality, and accuracy of information provided by the hierarchy to subordinates to explain and justify how decisions were made. When a superior communicates information honestly on time and in a manner that is responsive to the needs of individuals, the perception of informational justice is enhanced.

Copenhagen Burnout Inventory (CBI) [41]

The *Copenhagen Burnout Inventory* (CBI) is an alternative to the MBI. This measure, intended for all domains, is composed of three subscales: personal burnout, work-related burnout and customer relationship burnout. The variables of fatigue and exhaustion are central to this instrument. The personal burnout dimension is designed to assess the degree of fatigue and exhaustion regardless of employment status (unemployed, civil servants, retirees, etc.). Its difference with the other two dimensions (work and relationships) lies in the perception of the causes of exhaustion and fatigue.

However, this instrument also has some limitations. The three domains to which it refers (personal life, work and client relationships) are intertwined. Thus, relationship-related burnout is nested within work-related burnout, which is itself nested within life-related burnout. One cannot, at the same time, consider these three dimensions as being independent of each other, and measure them as separate constructs.

Oldenburg Burnout Inventory (OLBI) [42]

The *Oldenburg Burnout Inventory* (OLBI) is composed of a mixture of 16 positive and negative items. It covers only the first two dimensions of the MBI : emotional exhaustion and depersonalization/disengagement [51].

According to Demerouti et al [42], this mixture would avoid response bias and increase the validity of measures assessing burnout. Nevertheless, it has been shown that positive and negative affective modes have different antecedents [52], can function relatively independently and are differently represented in people's behavior [53]. This way of assessing burnout may therefore pose problems of interpretation. Moreover, some researchers [54] checked the factor structure of the OLBI, using confirmatory factor analysis (CFA), and came to the same criticism.

Burnout Measure (BM) [43]

Another instrument used is the *Burnout Measure* (BM). It is a unidimensional measure of burnout, which has the particularity of being usable not only in all professional fields, but also in other groups such as students, couples, parents, housewives, managers, athletes, friends, etc. It is proposed in a long version of 21 items, and in a short version of 10 items [44]. A single score is obtained by summing all item scores (after reversing the scores of positive items). The main criticism of the BM instrument concerns the definition on which it is based and its factorial structure [7]. Indeed, Pines and Aronson [55] describe burnout as a multidimensional construct: "a stage of physical, emotional and mental exhaustion caused by long-term involvement in emotionally demanding situations". This contradicts the measure described as unidimensional [7]. Furthermore, the operational definition does not correspond at all to the conceptual definition, since burnout is described as a syndrome composed of a set of symptoms including decreased enthusiasm, decreased self-esteem, hopelessness, feelings of being trapped, powerlessness and irritability, in addition to physical and emotional exhaustion [56].

The Spanish Burnout Inventory (SBI)

The SBI (or *Cuestionario para la Evaluación del Síndrome de Quemarse por el Trabajo*, "CESQT") consists of 20 items, grouped into four distinct dimensions: professional enthusiasm, psychological exhaustion (which includes physical and emotional exhaustion), indolence (i.e., attitudes of withdrawal, disengagement and cynicism), and feelings of guilt, arising in particular from the deterioration of the relationship with others [45]. The SBI is thus based on an extended model of burnout, in which the inclusion of guilt makes it possible to explain the existence of different modalities of expression of burnout.

Personal Style at Work (PSW) [46]

The SPT instrument contains 26 items and measures six individual variables considered to be predictors of burnout: Perfectionism (4 items), Self-Esteem (5 items), Intolerance of Uncertainty (5 items), Performance Pressure (3 items), Self-Affirmation (4 items) and Tendency to worry (5 items). The original version of the tool previously had seven factors and eight items per factor for a total of 56 items. This is cumbersome to administer and had a lower internal consistency index for the questionnaire as a whole ($\alpha = 0.49$), compared with the overall satisfactory internal consistency indices of its individual factors (Their α ranges from 0.61 to 0.86).

Shirom Melamed Burnout Measure (SMBM) [47]

The *Shirom Melamed Burnout Measure* (SMBM) is designed to measure personal resource depletion resulting from chronic exposure to stressors. It is composed of three dimensions: physical fatigue, emotional exhaustion and cognitive lassitude. The first dimension is already present in some assessment tools, such as the BM, and refers to a feeling of fatigue and lack of energy. The second is common to all measures of burnout (i.e., an exhaustion of emotional resources manifested by the feeling of not having the energy to invest in relationships with others). The third is not included in any of the existing measurement scales. It reflects aspects related to difficulties in concentrating, as well as in quickly mobilizing one's intellectual capacities. In this respect, some research points to problems of concentration, attention and memory among people suffering from burnout [57-61], which justifies the need to include such a dimension in the assessment of burnout. The SMBM thus offers the advantage of focusing exclusively on symptoms and not overlapping with other concepts, such as cynicism, distancing or self-efficacy. This feature allows differentiation between antecedents, coping strategies and burnout [47]. Another positive point is that this scale focuses on the most robust notion of burnout, namely three-dimensional exhaustion: physical, emotional, and cognitive [39].

Nonetheless, even if the psychometric properties of the SMBM have been demonstrated in numerous studies [62, 47, 26], its three-dimensional factorial structure raises methodological questions concerning the grouping of items by dimension. Franke [63] had already shown that the order in which items are presented in a measurement instrument could have methodological implications and biases. Items belonging to the same dimension are generally distributed within a

questionnaire in order to avoid participants guessing what the questionnaire is trying to measure. This reduces the influence of response biases, especially those related to social desirability and cognitive consistency [64, 65].

In brief, the following Table 1 attempts to present all of these seven aforementioned measurement scales in a comparative manner.

TABLE 1. MAIN SCALES FOR MEASURING BURNOUT.

Measurement Scales	Dimensions	Number of items
Maslach Burnout Inventory (MBI) [8]	- Emotional exhaustion, - Depersonalization, - Personal accomplishment.	*22 items grouped in 3 dimensions.*
Copenhagen Burnout Inventory (CBI) [41]	• Personal exhaustion, • Professional exhaustion, • Relational exhaustion.	*19 items grouped in 3 dimensions.*
Oldenburg Burnout Inventory (OLBI) [42]	- Emotional exhaustion, - Disengagement.	*Mix of 16 positives and negatives items divided into 2 dimensions.*
Burnout Measure (BM)[43]	- Burnout.	*Long version (21 items) and short version (10 items). One dimension.*
The *Spanish Burnout Inventory* (SBI) or (CESQT) [45]	• Professional enthusiasm, • Psychological exhaustion (physical and emotional), • Indolence (attitudes of withdrawal, cynicism and disengagement), • Feelings of guilt.	*20 items divided into 4 dimensions*
The *Personal Work Style* (PWS) [46]	- Perfectionism (*4 items*), - Self-esteem (*5 items*), - Intolerance of uncertainty (5 *items*), - Performance pressure(*3 items*), - Self-affirmation (*4 items*) - Tendency to worry (*5 items*).	*26 items and 6 individual variables*
Shirom MelamedBurnout Measure(SMBM) [47]	• Physical Fatigue (1-6), • Cognitive fatigue (7-11), • Emotional exhaustion (12-14).	*14 items divided into 3 dimensions*

In synthesis, most of the measurement scales described above were inspired by Maslach and Jackson's model [8], and therefore suffer from the same limitations. This is why, at present, many studies distinguish themselves by conceiving the measurement of burnout in a single dimension of emotional exhaustion [60, 62, 66], or in two dimensions (emotional exhaustion and depersonalization/disengagement) [42, 47, 67]. These two dimensions are the most consensual and would explain the greatest part of the variance for burnout [68]. However, from our point of view, the choice of a measurement instrument should be based both on its capacity to assess the main manifestations of what it is supposed to measure (rather than a set of manifestations mixing causes, symptoms and consequences), as well as on its theoretical anchoring and psychometric properties.

B. COVD19 / SARS-COV2

The discovery of a new coronavirus - called 2019-nCoV and then SARS-CoV-2 and later COVID-19 (CoronaVIrus Disease) - was officially announced on January 9th of 2020 by the Chinese health authorities and the World Health Organization (OMS) [69]. Similar to the severe acute respiratory syndrome (SARS) virus and the Middle East Respiratory Syndrome (MERS) virus, this coronavirus is the causative agent of this new respiratory infectious disease. It affects individuals in different ways. Most infected individuals develop a mild to moderate form of the disease, experience only mild to moderate symptoms, and usually recover without hospitalization. This virus is transmitted primarily through droplets produced when an infected person coughs, sneezes or exhales. The symptoms of coronavirus infection are similar to those of seasonal influenza, SARS or MERS. For example, the most common symptoms are fever, dry cough and fatigue. While the less common symptoms are body aches, sore throat, diarrhea, conjunctivitis, headache, loss of smell or taste, and rash [70]. SARS-CoV-2 coronavirus appears to be slightly more contagious than seasonal influenza virus and its infection is somewhat more severe in people with chronic disease or sensitivity.

Worldwide, this general fact has disrupted the lives of people and the global economy. Directly or indirectly, COVID

has impacted all sectors of activity and no country has been spared. In Morocco, for example, the education system has been hit hard by the health crisis. Its consequences (repeated stoppages of classes and closure of schools) have disrupted, or even reduced, the learning achievements of students [71], increased their anxiety [72] and destabilized the daily work of educational staff [73]. Indeed, the 2020 year will leave in the memory of most students the indelible memory of a disrupted schooling [74]. It will also have left its mark on the lives of educational staff (teachers, administrators, managers and inspectors), who were forced to respect social distance, to confine themselves for long periods of time to their homes [75], to adapt in a hurry and in an improvised manner, to redouble their efforts and creativity and to take on new responsibilities, all the while guarding against the COVID19 [76]. These forced adaptations have certainly taken a heavy toll on the bodies, morale, and psyches of educational personnel. In this regard, our study will explore the potential impact of COVID19 on the work of educational inspectors by measuring their degree of burnout and determining what, if any, associated predictors there are.

III. SAMPLE, MATERIALS AND METHOD

A. *The study samples*

A non-probability sample was selected on a voluntary basis, from the file of graduates of the CFIE over the past ten years. Thus, our study mobilized 113 education inspectors (IEs), representing three different branches (ISMF, IEP, and IESQ) and covering five regional academies (AREFs). They all graduated from the CFIE of Rabat. Their characteristics are presented in Table 2 below, according to age, gender (M, F), years of inspection practice (Exp.), practice of a sports hobby (PLS), and by educational sector.

TABLE 2. CHARACTERISTICS OF OUR STUDY SAMPLE

VARIABLES							
Exp.	**ISMF**	**IEP**	**IESQ**	**Tot**	**%**	**M**	**F**
1 - 3 years	08	21	12	41	36,2	32	09
4 - 7	11	27	21	59	52,2	44	15
8 - 9	05	06	02	13	11,5	04	09
Total	24	54	35	113	100	80	33
PLS	13	19	25	57	-----	32	25
%	54.1	35.1	71.4	50.4	-----	28.3	22.1
Age							
36-40	05	13	09	27	23,8	17	10
41-45	11	21	14	46	40,7	29	17
46-50	05	14	10	29	25,6	23	06
51-55	03	06	02	11	9,7	11	00
Total	24	54	35	113	100	80	33
%	21,2	47,7	30,9	100	----	70,7	29,2

ISMF: Inspectors of Materials and Financials Services; IEP: Inspectors of Primary Education; IESQ: Inspectors of Qualifying Secondary Education; Exp.: Professional Experience; PLS: practice of sport leisure; M: Male; F: Female.

B. *Materials and method*

a- Procedure and measuring instrument

The study is a multicenter descriptive survey. It was carried out over four months (in April and May 2020, and in January and March 2021), using an anonymous self-administered questionnaire accessible online. Two e-mail reminders were sent to reactivate the administration of the questionnaire. The invitation to participate was sent by email, which contained a private link to a Google form with 3 sections: one socio-demographic, providing information on variables such as gender, age, years of practice (experience as an inspector), inspection branch, practice of a leisure sport... The second section contained 13 items related to working conditions during COVID time, workload, strategies and protection and outreach measures established against SARS-COV2. The third section was the French version of the Maslach Burnout Inventory (MBI) scale [77].

This inventory for measuring burnout syndrome is the most widely used in research today [78]. We adapted it to the context of COVID, which affects the Moroccan educational system, and then validated it twice by a pre-test and by a panel of expert researchers (n= 5) [79-82]. It presents a satisfactory internal consistency for all three dimensions, with Cronbach's alphas of 0.90, 0.64, and 0.74 respectively, and a factorial validity comparable to the original English test. The MBI makes it possible to nuance the responses and to obtain more precise results regarding the levels, factors and conditions of burnout. It consists of 22 multiple-choice items, covering three dimensions:

1. Emotional Exhaustion (EE): composed of 9 items that measure the feeling of being emotionally exhausted by the demands of inspection in the context of the COVID19. This variable combines acute or profound fatigue, job disinvestment, and feelings of failure and incompetence at work
2. Depersonalization (D): containing 5 items that measure the degree of distance, feelings, and chilliness from COVID19 in the educational setting. This dimension reflects a dissociative psychological symptom. It is a feeling of loss of self, in which the individual has no control over the situation.

3. Personal Accomplishment (PA): composed of 8 items that measure the degree of job satisfaction in times of COVID19 and the perception of skill in the midst of a health crisis. This dimension refers to the importance of being fulfilled in one's work.

The term "burnout" was never included in the administered scale in order not to influence our respondents. Each item on the scale is assigned a score on a Likert scale ranging from "never", "a few times a year", "once a month", "a few times a month", "once a week", "a few times a week" to "every day". Each response is rated from 0 to 6. The sum of the scores of the answers allows the calculation of three scores related to the three dimensions: the score of emotional exhaustion (SEE), depersonalization (SD) and reduction of personal accomplishment (SPA). According to the values obtained, Burnout is rated in three tertiles: "low", "moderate" or "high" for each dimension. A high score on the first two dimensions (EE and D) and a low score on the third (PA) corresponds to a high level of burnout.

The evaluation of the burnout levels (low/moderate/high) of the MBI will be done according to the reference values established by Maslach et al [48] (Table 3).

TABLE 3. THE "REFERENCE" VALUES OF THE 3 SUBSCALES OF THE "MASLACH BURNOUT INVENTORY".

Burnout Level	SEE	SD	SPA
High	> 30	> 12	< 33
Moderate	18 - 29	6 - 11	34 - 39
Low	< 17	< 5	> 40

SEE: emotional exhaustion score - SD: despersonalization score and SPA: personal accomplishment score

b- Data analysis

The statistical data were entered in Excel format and encoded for processing. Then, they were exported and analyzed using SPSS-25 software. We calculated the MBI scores from the sum of the responses to the 22 scale items. Descriptive data were used as markers to analyze demographic variables.

These were expressed as mean ± standard deviation or percentage for quantitative variables. Predictive factors were assessed univariately, using ANOVA or the Mann-Whitney test where appropriate.

To establish an association between the presence or absence of burnout and the categorical variables, which were examined as possible risk factors, Fisher's exact test was used. The confidence intervals (CIs) constructed to differentiate proportions and ratios were based on a normal approximation, as the sample size ensured that this approximation was acceptable. To analyze the relationship between the components of burnout (EE, D, and AP) and the different levels of the variables studied as potential risk factors, a nonparametric method was used: the Kruskal & Wallis range-based test. In all cases, a p value < 0.05 was established as a significative value for all our tests [83].

IV. RESULTS

A. General results

Of the 204 invitations sent out, 113 responses were received, for a response rate of 55.39%. After analysis of the collected data, a Cronbach's alpha test was applied to measure the internal validity of the scale adapted to the COVID19 context. An α value = .88 is obtained, which is very acceptable compared to the standard (α = .7) established by Nunally [84].

Regarding exposure to COVID-19: 11% of the respondents admitted to having contracted COVID, of which 3% at their workplace, 5% through family contact and 3% from an unknown source. Almost half had performed the PCR test[4] to be sure. The other half had almost the same symptoms, but did not test. They still said they were almost certain they had contracted COVID.

Finally, all were cured: either after hospitalization on an incubator-breathing machine (n=1), medical treatment in hospital (n=3) or treatment and confinement-isolation at home (n=7). However, they all recovered, after a long convalescence, with relatively light sequels (weight loss, loss of appetite, feberness, lumbago and/or fibromyalgia...).

B. MBI results

The results of the MBI according to each dimension of Burnout are shown in Table 4 below. The average scores obtained on each dimension are: EE=19.67 ± 10.19; D=8.72 ± 6.10 and AP=33.94 ± 5.01. They correspond for each category to a moderate Burnout in most of the education inspectors.

Seven education inspectors (EIs), or 6.19%, have a high level of Burnout in all three dimensions, three of whom are Materials and Financials Services Inspectors (ISMFs). 39 of the EIs (34.51%) have a high level of Burnout in the dimension of emotional exhaustion or depersonalization. 42 EIs (37.16%) have at least a high level of Burnout in one of the burnout domains. 09.73% of them had a high level of EE, 30.97% had a high level of D and 12.38 have a high level of PA. Meanwhile, 53.98% of EIs recorded moderate burnout in PA, of which one-third were ISMFs.

TABLE 4. RESULTS OF THE MASLACH BURNOUT INVENTORY (MBI) ACCORDING TO ITS THREE DIMENSIONS AND THE BURNOUT DEGREE.

	Burnout Levels		
	Low	***Moderate***	***High***
Dimensions			
Emotional exhaustion (EE)	(56) 49.55	(43) 38.05	(14) 09.73
Depersonalization (D)	(41) 36.28	(37) 32.74	(35) 30.97
Personal Accomplishment (PA)	(38) 33.62	(61) 53.98	(14) 12.38

[4] The *Polymerase Chain Reaction* (PCR) test is used to determine whether a person is infected with SARS-CoV-2. It usually starts with a nasopharyngeal swab. It is also possible to perform a salivary swab, but this method is considered insufficiently reliable. Results can be available within 24 to 48 hours.

Univariate analysis for each dimension showed that only "emotional exhaustion" and "depersonalization" were correlated with sports leisure practice (p = .01) and the nature of the inspection branch (p = .02) respectively. Similarly, no factor was correlated with high Burnout across the three dimensions of the BS. Our results confirm no statistically significative difference for the ordinal variables gender, age, and experience (p = .05).

Indeed, in relation to the gender variable, the prevalence of moderate or high burnout among female inspectors was 62.82%, whereas among male inspectors it was 60.9%. Likewise, the different age categories of our respondents had relatively the same prevalence rates of burnout, with no notable differences.

Also, the analysis of the "experience" variable shows that novice inspectors (between 1 and 3 years of experience) and experienced inspectors (8 to 10 years) had a prevalence of moderate or high burnout that was almost identical (59.3% and 58.7% respectively).

C. Physical fatigue

The reorganization of work schedules and conditions has generated additional physical tiredness for most IEs. Physical fatigue was more marked among inspectors of material and financial services (65%) and inspectors of qualifying secondary education (61%) than among inspectors of primary education (49%) (Table 5). This was increased after lockdown for all three categories of inspectors, following the resumption of face-to-face studies and the increase in workload to compensate for the slowdown caused by shutdown.

These three levels of physical fatigue were considered by 59% of respondents to be higher than normal (a year without COVID).

TABLE 5. LEVELS OF PHYSICAL FATIGUE AND PSYCHOLOGICAL EXHAUSTION AMONG INSPECTORS BY BRANCH.

Branch	Physical Fatigue levels	%	Burnout levels	%
Inspector of Material and Financial Services (ISMF)	3	65	2	71
Inspectors of Primary Education (IEP)	2	49	2	66
Inspectors of qualifying secondary education (IESQ)	3	61	2	55

Fatigue levels ranging from 1: slight fatigue to 3: strong fatigue.

D. Moral and psychological exhaustion

Notable mental and moral exhaustion was expressed by ISMF, IEP, and IESQ inspectors, respectively (71%, 66%, and 55%). The level of moral exhaustion was higher than usual, but virtually the same for all three categories of inspectors (Table 5). Organizational changes were experienced as destabilizing by 66% of inspectors (IEs). For 49% of IEs, the lack of visibility, the deficit of information, as well as the inadequacy of protective equipment were major insecurity and stress factors in the first months of the epidemic. 57% of our surveyed inspectors felt dissatisfied with the support they received from their hierarchy and their institution. For them, emotional involvement at work and dissatisfaction with hierarchical support had a clear impact on their observed levels of burnout.

E. Fear of COVID infection

A total of 94% of the participants indicated that they feared being infected by the Coronavirus. This fear is widespread across all inspection categories, although it is slightly less prominent among ISMFs (Table 6). It is fueled by the concern of dying after having contracted this infection (81% of respondents), by the fear of a vital risk (35%) and by the risk of contaminating one's relatives (72%). This fear reflects the stress of the practice and the guilt of being a potential vector of contagion from the workplace to the family.

TABLE 6. FEAR OF INFECTION FOR SELF, FOR RELATIVES, AND FOR BOTH ACCORDING TO INSPECTION BRANCH.

Branch	Fear for self	Fear for relatives	Fear for both
ISMF	23%	18%	19%
IEP	30%	31%	42%
IESQ	28%	23%	33%
Total	81%	72%	94%

F. Management of education-training during the health crisis

The fact that Morocco was affected by SARS-COV2 a little later than Europe, for example, made it possible to prepare for it early and avoid being surprised by a wave of contagion. Thus, very quickly, a strategy was adopted by the educational authorities to contain this pandemic and to ensure the continuity of learning for students. It was built around six main lines of action:

- Practices related to budgetary and financial management: finding the necessary financial resources to ensure health and safety within the school and obtaining the necessary equipment...,
- Educational HR management practices: fully mobilizing available human resources inside and outside the school, reassigning staff within the school, distributing new roles and tasks...,
- Leadership practices: motivating and challenging teams by developing a sense of national pride, a civic mindset, mutual support and a duty to serve the country...,
- Communication practices: maintaining the link and contact with educational staff (teachers, administrators, managers and inspectors), and with parents and students, diversifying information and communication tools so as not to exclude anyone...,
- Practices related to the planning and organization activities: ensuring the continuity of teaching and learning activities for the students, and facilitating management and inspection tasks for educational staff.
- Formalization of measures and protocols that must be undertaken and respected in the event of confirmation of a

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case of contamination among students, academic staff, teachers or inspectors.

However, the implementation of this strategy has been accompanied by budgetary constraints and functional difficulties that have only increased the tension between educational partners. Indeed, the repeated interruption and restarting of schooling and the switch between face-to-face and distance learning (on radio, television and the Internet) have altered both the schooling of students and the professional tasks of teachers, administrators and inspectors. They have been a source of stress for parents and teachers, and anxiety for education inspectors. These findings are supported by the results of a study conducted in August 2020 by the United Nations on "Education in a time of COVID19 and beyond? ". The following figure 2 attempts to show the degree to which COVID has disproportionately affected the different educational cycles in Morocco.

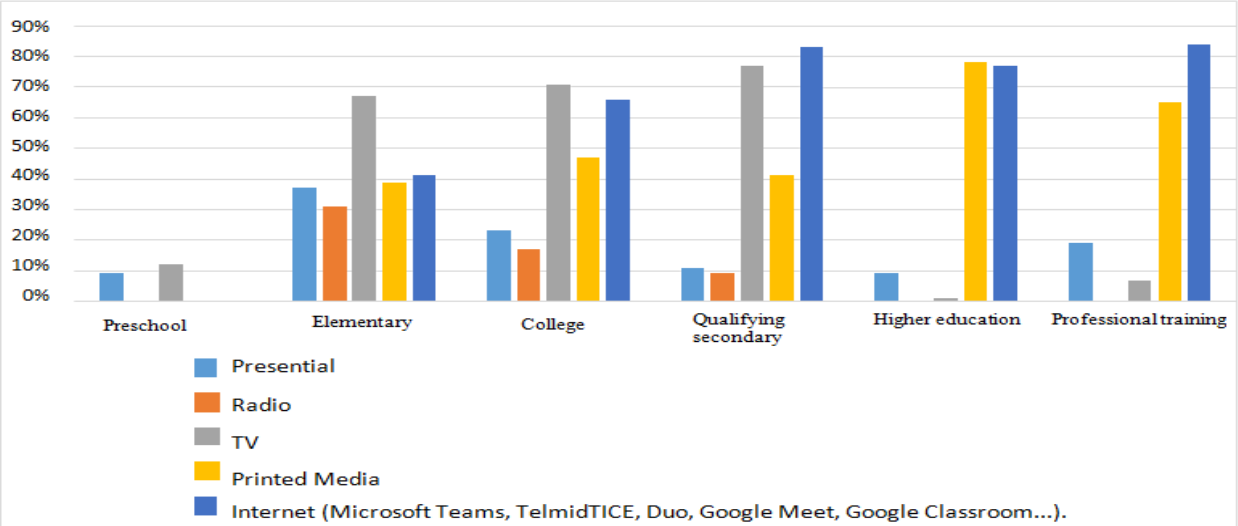

FIG 2. TYPES OF TEACHING STRATEGIES IMPLEMENTED IN MOROCCO DURING THE COVID 19 PANDEMIC (FROM MARCH TO JULY 2020) ACCORDING TO EDUCATIONAL LEVEL (IN PERCENT).

At the same time, the most frequently mentioned terms used by EIs to describe their work during the health crisis are presented in the following figure. The top five most cited words are respectively: tiring (28%), difficult (27%), stressful (24%), tedious (22%) and distressing (21%).

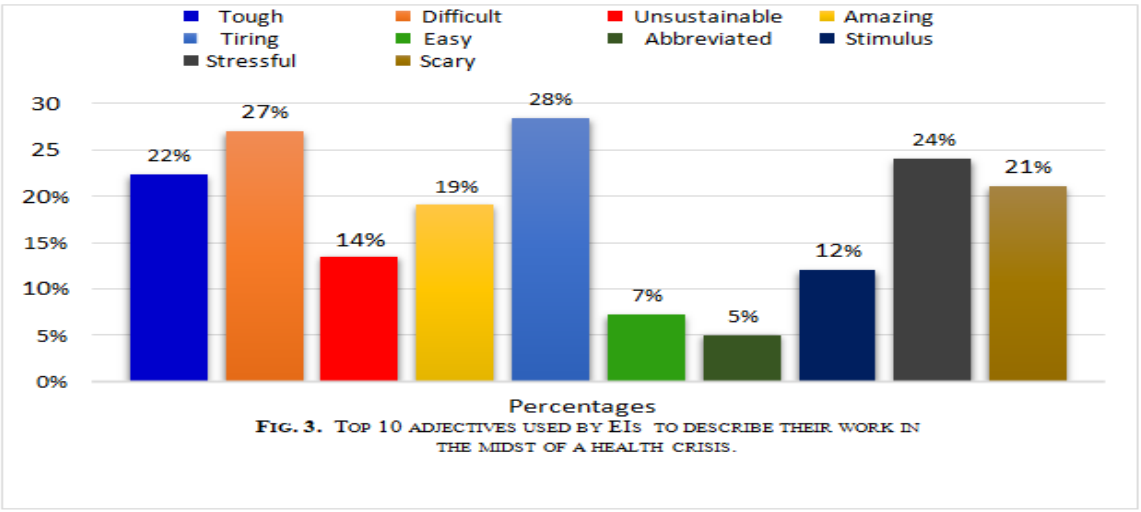

FIG. 3. TOP 10 ADJECTIVES USED BY EIS TO DESCRIBE THEIR WORK IN THE MIDST OF A HEALTH CRISIS.

Also, communication about the administrative, academic and educational management mechanisms of COVID was generally considered insufficient by 52% of the EIs surveyed. The lack of information on the mechanisms for fighting and protecting against the pandemic in schools was mainly pointed out by the ISMF (39%).

After lockdown, professional stress does not diminish despite the notable decrease in infected cases and the decline in mortality due to COVID. On the contrary, the vaccination campaign undertaken early and as a priority in the educational professional sector has brought relief and a considerable decrease in stress without however disappearing.

V. DISCUSSION

Our study assessed the prevalence of burnout among education inspectors in Morocco during the pandemic. It determined the psychological effect of the COVID19 on education inspectors and identified the associated psycho-socio-organizational factors, in order to define preventive rather than curative strategies. Our methodological approach was based on a Google-form self-questionnaire with 3 sections: one socio-demographic, the second with 13 items related to working conditions and constraints in times of COVID and protection and extension strategies and measures to curb SARS-COV2. While the third section contained the French version of the Maslach Burnout Inventory (MBI) scale.

With a response rate obtained of 55.39%, this percentage is close to the average reported in the literature [85, 86]. The authors cite that a low response rate from professionals is mainly caused by a lack of motivation [87] and confiance [88], and that the people solicited fear that the results of the study will upset their professional realities [89]. For Maslach et al [48], the burnout syndrome is composed of three dimensions: emotional exhaustion, depersonalization, and personal accomplishment. It corresponds to a response to chronic stress in the professional field. The symptoms are varied and non-specific: fatigue (physical, emotional and cognitive), irritability, sleep disorders, anxiety... Emotional exhaustion is one of the key dimensions of Burnout, it is a feeling of emotional wear and tear where the person has the feeling of being invaded and overwhelmed by his work. The other key dimension is the development of a loss of empathy with an insensitive, impersonal or cynical attitude called depersonalization. The third dimension, the reduction of personal accomplishment, concerns the sense of competence, effectiveness and self-fulfillment in work.

In the literature, Burnout scores are presented differently from one author to another. Some consider a high score on all three dimensions [90-92, 10] or a high score on the two main dimensions (emotional exhaustion and depersonalization) [93, 94]. Others consider only the score of the first dimension "emotional exhaustion" [60, 66]. This would make it difficult to compare the percentages and scores observed.

Our study reveals that there is a prevalence of moderate burnout among the majority of education inspectors (EIs). It is confirmed as described by several authors with education professionals [95], and especially with teachers [96] and administrative managers [17, 26].

On the other hand, no demographic variables were correlated with EIs' burnout. The only etiological variables associated with EIs' burnout are the nature of the field (ISMF, IEP or/and IESQ) and the practice of leisure sports. This result could be explained by the fact that the ISMFs, even if they are less numerous, are more solicited than their pedagogical counterparts (IEP and IESQ) on the provincial or regional territory. Again, the practice of leisure sports could constitute a valve or an escape route to decompression for IEs, regardless of their educational field.

Nevertheless, in the literature, the conclusions on this issue remain mitigated. Indeed, the relationship between gender and burnout is controversial: some studies confirm that burnout is higher in women [97], others show the opposite [98]. For some, male gender is a protective factor against burnout [99]. Emotional exhaustion tends to be higher in women. Their working hours are shorter, but it is obvious that they carry a double burden: work and the weight of domestic tasks and childcare. These differences in results are potentially the result of inequalities in social and cultural values and socialization patterns.

Likewise, for several authors, age is a demographic variable clearly associated with burnout: more aged individual, more apt to resist professional burnout [100] and adapt to it through appropriate coping strategies [101]. This is not the case in our research. Also, being married or in a couple is also reported as a protective factor against burnout [102].

In summary, if some research has been able to show that there are correlations between ordinal variables and the prevalence of burnout [103], then ours finds no significant correlation. And to date, all studies have failed to find a statistically significant relationship between the prevalence of burnout and the variables gender, age, socio-emotional (marital) status, experience and degree.

We were therefore able to deduce that while variables such as age, gender and work experience do not have a direct effect on the level of burnout, the association or combination of some of these variables is able to explain to a large extent the values of one or more dimensions. Thus, PE can be explained by the combination of age and years of experience, and D can be explained primarily by age and gender.

6.19% of EIs have a high level of Burnout in all three dimensions, almost half of whom are Material and Financial Services Inspectors (ISMFs). 39 of the EIs (34.51%) have a high level of Burnout in the dimension of PE or D. 42 EIs (37.16%) had at least a high level of Burnout in one of the BS domains. 09.73% of them had a high level of PE, 30.97% had a high level of D and 12.38 had a high level of PA. In contrast, 53.98% of the EIs recorded moderate burnout in personal accomplishment, one-third of whom were ISMFs.

In the literature concerning education professionals, the percentage of educators with high burnout scores varies between 21 and 43% [104]. For our study, it is 23.17%. The percentage of high scores on all three dimensions ranges from 7 to 13% [105], and is lower in our study. In this respect, it should be noted that the highest values correspond to North American studies. The values observed may therefore be related to the working conditions specific to each country or to socio-cultural particularities [106-108].

Nonetheless, as in any study based on a questionnaire, there is a selection bias due to non-response to the questionnaire. This bias can be interpreted in both directions. Either the non-response is related to the lack of interest in the topic among people who are free of any burnout, leading to an overestimation of the burnout percentage. Or, conversely, the

non-response concerns people affected by burnout and in this case we have underestimated the burnout rate. For some Burnout specialists, depersonalization is considered a defense reaction to burnout [109], and could be interpreted as a form of coping by people [110, 111].

Burnout syndrome is furthermore associated with the workload and variety of job tasks of EIs in the midst of a health crisis. Workload was therefore assessed in our study by the number of audit and inspection assignments per month and by the type of activity performed by inspectors. Depending on the line of work, the constraints of inspection activities, the spread of COVID19 and the nature of the tasks assumed are different.

However, our study does not claim to be exhaustive. Factors that predict or protect against burnout can always be evaluated. This is the case, for example, for factors relating to job satisfaction [112, 113], the existence of interpersonal conflicts with colleagues or with the hierarchy [114] or the ergonomic conditions of the work [115], which would suggest that a favourable work environment and satisfactory conditions are likely to protect against burnout [116]. Similarly, hierarchical support [117,118], recognition at work [119] and professional consideration [120] would act as a buffer against burnout and have a strong saving impact on EIs.

At the same time, the COVID epidemic is particularly anxiety-provoking and destabilizing for the inspection staff, who are in the forefront of noticing its dangerousness. Therefore, other extra-educational variables such as the reorganization of family life, the care of out-of-school children and homework help, the fear of contaminating one's family, especially the elders, could be added as stressors and factors associated with the burnout of education inspectors.

VI. CONCLUSION

The purpose of this study was to audit the prevalence of burnout among education inspectors in Morocco in the context of the pandemic, to determine the psychological effect of COVID19 on education inspectors, and to identify the associated psycho-organizational factors, in order to define preventive rather than curative strategies. A moderate prevalence is concluded among the majority of EIs. Their identified Burnout rate is average compared to the MBI benchmark and relatively low compared to the literature due to a strong sense of personal accomplishment among EIs. 6.19% of the EIs have a high level of Burnout in the three dimensions of the MBI, almost half of whom are Material and Financial Services Inspectors (ISMFs). 34.51% of EIs have high Burnout in the dimension of emotional exhaustion or depersonalization, and 37.16% have at least high Burnout in one of the BS domains.

Three lessons emerge from our study. The first is that the inspection profession is particularly stressful and at risk of burnout. The second is that burnout is the result of a complex and dynamic combination of etiological and psychosocial factors. In order to account for its complexity, a multifactorial and integrative approach [39] is more than necessary to understand the mechanism of gradual evolution from transient stress to severe or chronic burnout. The third is that this health crisis has shaken our educational structures, and has affected all education inspectors regardless of their specialty branch (ISMF, IEP and IESQ). Concerning their exposure to COVID19: 11% of the respondents admit to having contracted COVID, of whom 3% in the workplace, 5% through family contact and 3% from an unknown source. Fortunately, all of them have recovered, but with more or less slight sequels.

This study confirmed the association between EIs' burnout and certain psycho-organizational factors on which it is possible to act to annihilate burnout. The main variables associated with EIs' burnout are the nature of the field (ISMF, IEP or/and IESQ) and the practice of leisure sports. Moreover, the deleterious consequences of burnout on the physical and mental health of education inspectors are numerous, ranging from a decrease in quality of life (professional, familial and social) to relational disorders and interpersonal conflicts, as well as the emergence of physical disorders (fatigue, lumbago, fibromyalgia) or psychological disorders (stress, anxiety, unwellness, emotional disturbance, fear). The potential risk of developing it would probably slow down the vocations of some inspectors for their profession. Finally, burnout would be involved in the degradation of relationships: inspector - line manager (provincial director), inspector - teacher/manager, between colleagues and within one's own family.

Indeed, BS is associated with workload in the context of a health crisis. The rearrangement of working hours and conditions has generated additional physical fatigue for most IEs. It is more evident among material and financial services inspectors (65%) and among inspectors of qualifying secondary education (61%). This physical fatigue is considered by 59% of the IEs to be higher than normal (a year without COVID).

Equally, a notable psychological exhaustion was expressed by ISMF, IEP and IESQ inspectors respectively (71%, 66% and 55%). The level of emotional exhaustion was higher than usual, but virtually the same for all three categories of inspectors. Emotional involvement at work, lack of visibility in managing the health crisis, deficit of information and communication, inadequacy of protective equipment, absence of hierarchical support, insufficient decision-making autonomy, interpersonal conflicts and fear of COVID infection (for oneself, for relatives and colleagues) were stressful factors, which had a clear impact on their identified levels of emotional and physical exhaustion.

Ultimately, our study focused on the short-term effects of COVID rather than its impacts (medium- and long-term outputs). Indeed, the pandemic is still raging and there is still a risk that the situation will worsen. It is therefore still too early to draw up a final balance sheet and examine its professional, economic, political and social implications. In the face of this anxiety-provoking situation and in the presence of these conjunctural constraints, a series of preventive measures can be decreed to properly manage the stress of educational personnel in general and to attenuate burnout among inspectors in particular.

First, the prevention of professional burnout must be designed by the management of the educational system at the highest level, by involving all the relevant actors of this sector. Secondly, psychological assistance is necessary, especially if the level of stress persists and as long as COVID is ravaging the system. Those who are most exposed must be coached, at least temporarily, in their professional activity. The prevention of burnout requires local management, which must be adapted to the pandemic context, through training and guides on stress management, webinars, accompaniment and mindfulness sessions, the establishment of spaces for dialogue within schools, provincial directorates and AREFs, and the adoption of effective coping strategies. Also, a modification of the working conditions must be made, through flexible working hours, telecommuting and prioritization of tasks and missions (only do what is necessary, urgent and important).

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