NAVIGATING THE SPECTRUM: UNRAVELING DEMOGRAPHIC, PROFESSIONAL, AND MENTAL HEALTH DIMENSIONS AMONG EDUCATORS IN AUTISM UNITS

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Abstract

Autism represents a multifaceted neurodevelopmental condition marked by difficulties in social interactions and behavior. Educators, particularly those with specialized training, hold a pivotal position in delivering customized assistance to individuals with autism and promoting their meaningful inclusion within society. Hence, the aim of this study is twofold: firstly, to identify risk factors for emotional exhaustion among Moroccan educators working in autism units (N=104), with a focus on psycho-emotional aspects; secondly, to compare the intensity of the three dimensions of emotional exhaustion based on levels of psycho-emotional factors such as stress, anxiety, and depression. The study on educators in autism units unveils a predominantly female demographic (62.5%), with the "30 to 40" age group comprising the majority (40.40%). Educational qualifications reveal 51% with a bachelor's degree, and 59.6% are married. Financially, 69.20% view their economic situation as average, with most earning between 200 and 400 dollars monthly (45.20%). Health-wise, 79.80% are without illnesses, but 17.3% face health issues, including metabolic conditions (9.6%) and respiratory problems (5.80%). Mental health analysis reveals varying stress, anxiety, and depression levels, with age correlating positively with stress and negatively with depression. Regression analyses show stress and anxiety predicting emotional exhaustion and depersonalization, while stress significantly impacts personal accomplishment. Educators experiencing severe stress exhibit notable burnout differences. This study highlights the intricate connection of demographic, professional, and mental health factors, emphasizing the necessity for targeted interventions to bolster the well-being of educators in autism units.

Keywords: Autism, Mental Health, Educator Well-Being, Emotional Exhaustion.

1. INTRODUCTION

Autism represents a multifaceted neurodevelopmental condition marked by difficulties in social interactions and behavior (1). People with autism commonly display distinctive combinations of strengths and challenges, emphasizing the importance of offering personalized support and targeted interventions (2). Educators, particularly those with specialized training, hold a pivotal position in delivering customized assistance to individuals with autism and promoting their meaningful inclusion within society (3). Numerous genes have been associated with the development of Autism Spectrum Disorders (ASD), with a majority of them playing roles in neuronal synaptogenesis. In addition to genetic factors, various environmental influences and co-occurring conditions, such as gastrointestinal abnormalities and immune imbalances, have been identified as being linked to the underlying pathophysiology of ASD (1, 4).

Epidemiological research has indicated a significant rise in the occurrence of ASD in recent times. This increase is particularly notable in boys, with a prevalence four to five times higher than that in girls. Globally, around 1 in 100 children are identified as

having ASP. The frequency of ASD diagnoses has expanded progressively and displays significant fluctuations among different sociodemographic categories and regions (5).

Research highlighting the social and academic advantages of inclusive educational placement has significantly influenced the development of educational policies over the past four and a half decades. Consequently, a considerable number of individuals with ASD are now receiving their education in inclusive settings, predominantly within the general education framework. When these individuals bearing the challenge of ASD are integrated into mainstream education, their educators assume a pivotal responsibility in fostering and supporting inclusion strategies that ensure equitable entry to the curriculum, along with social engagements within the class (Individuals with Disabilities Education Act). Evidence indicates that educators might not be effectively implementing inclusion techniques within their teaching environments. For instance, in an extensive study incorporating various research methods, Segall and Campbell discovered that although special education teachers acknowledged the significance of inclusion, general education teachers were less inclined to indicate the utilization of optimal inclusive education methods for students with ASD (6).

Educators responsible for children with ASD tend to encounter heightened levels of stress in comparison to those instructing typically developing children (7, 8). This discrepancy could be attributed to the occupational challenges stemming from the specific needs of children within the autism spectrum. Notably, instructors of children with ASD are tasked with additional responsibilities, including modifying curriculum materials and creating an accommodating environment (7, 8). Moreover, the lack of adequate training or skills and a diminished sense of self-efficacy in effectively teaching these children contribute further to the stress experienced by teachers (7).

Mitigating stress levels among teachers is anticipated to yield several positive outcomes, such as enhancing their performance (8, 9), bolstering retention rates, and fostering improved social interactions (9). Hence, the objective of this study is twofold: firstly, to identify risk factors for emotional exhaustion among Moroccan educators working in autism units (N=104), with a focus on psycho-emotional aspects; secondly, to compare the intensity of the three dimensions of emotional exhaustion based on levels of psycho-emotional factors such as stress, anxiety, and depression.

2. MATERIAL AND METHODS

2.1. Participants

A cross-sectional study was conducted on autism unit educators (N=104) recruited from a set of specialized units between March and June 2022. Subjects working in any of the centers were eligible for this study. The study was approved by the Ethics Committee of Ibn Tofail University in Kenitra, Morocco. All participants provided a written informed consent form upon enrollment and were informed about the research objectives and anonymity.

2.2. Socio-demographic Data

The socio-demographic informations of each individual werecollected on the day of the survey.

2.3. Mental Health Symptoms Assessement

The study assessed the mental health status of educators working in specialized centers using the 21-item Depression, Anxiety, and Stress Scale (DASS-21), which is a widely used quantitative test for evaluating participants' mental well-being **(10)**. The DASS-21 consists of three subscales: stress, anxiety, and depression, each comprising seven items. Participants rated each item on a 4-point Likert scale, ranging from 0 ("Does not apply to me at all") to 3 ("Applies to me very much or most of the time") **(11).** For the stress subscale, items "1, 6, 8, 11, 12, 14, and 18" were used, and the total scores on these items were categorized into five levels: normal (0-10), mild (11-18), moderate (19-26), severe (27-34), and extremely severe (35-42) **(11).** The anxiety subscale included items "2, 4, 7, 9, 15, 19, and 20," with total scores divided into five levels: normal (0-6), mild (7-9), moderate (10-14), severe (15-19), and extremely severe (20-42) **(11)**. The depression subscale score (ranging from 0 to 42) was obtained by adding the scores of items "3, 5, 10, 13, 16, 17, and 21," and the total scores were categorized into five levels: normal (0-9), mild (10-12), moderate (13-20), severe (21-27), and extremely severe (28-42) **(11).** The Arabic version of the DASS-21 scale has undergone validation in multiple studies, demonstrating high reliability **(10).**

2.4. Maslach Burnout Inventory Test

The Maslach Burnout Inventory (MBI) is a specific version derived from the MBI Human Services Survey, which was originally designed to assess feelings of exhaustion and burnout in individuals working in human services **(12).** Due to medical personnel being extensively studied within the human services professions, the MBI was developed by making slight modifications to the wording of the original survey. The MBI consists of 22 seven-point items, distributed across three dimensions: Emotional Exhaustion (nine items), Personal Accomplishment (eight items), and Depersonalization (five items). Respondents rate each item on a scale defined as follows: 0 = never, 1 = a few times a year or less, 2 = once a month or less, 3 = a few times a month, 4 = once a week, 5 = a few times a week, and 6 = every day. Higher scores on the inventory indicate a higher level of burnout.

2.5. Data Analyses

The data analysis was performed using SPSS software (version 22.0). For qualitative variables, percentages were used, while means ± standard deviations (SD) were employed for quantitative variables. Pearson's correlation test was used to investigate the associations among the study variables. Moreover, hierarchical regression analysis was utilized to determine the predictors of emotional exhaustion, personal accomplishment, and depersonalization. Additionally, a comparison of the subjects' mental health symptoms based on the degree of stress symptoms was conducted using the Kruskal-Wallis test, followed by the Mann-Whitney test.

3. RESULT

The distribution of educators in the autism unit highlights a clear majority of females (62.5%) compared to males (37.50%). Regarding age groups, the most prominent category falls within the "30 to 40" range, making up 40.40% of the educators. The age group "40 to 50" accounts for 31.7% of educators, followed by the "20-30" age group with 22.10% representation. Lastly, educators above the age of 50 constitute 5.8% of the total. Regarding educational qualifications, the findings reveal that 51% of

educators hold a bachelor's degree (Bac+3), and a smaller percentage have achieved a master's degree (Bac+5), accounting for 5.8% of specialized educators. Educators with a high school diploma (bac) represent 16.30% of the staff, while those with a diploma equivalent to two years of post-secondary education (bac+2) make up 12.50%. The study's results revealed a prevailing marital status among educators, with 59.6% of them being married, 37.5% single, 1.9% divorced, and 1% widowed. Regarding their financial status, the majority of educators (69.20%) perceived their economic situation as average, 10.60% considered it good, and 20.20% expressed dissatisfaction. Concerning the distribution of salaries, the data showed that 45.20% of educators earned a monthly income ranging between 2000 and 4000 dh, 29.80% earned between 4000 and 6000 dh, 22.10% earned less than 2000 dh, 1.9% earned between 6000 and 10000 dh, and 1% earned over 10,000 dh per month. Among educators, a significant majority, accounting for approximately 79.80%, do not suffer from any illnesses. However, regrettably, 17.3% of educators experience certain health issues. Among them, 9.6% have metabolic conditions, 5.80% face respiratory problems, 2.90% deal with cardiovascular issues, and 1% are affected by neurological disorders.

The study reveals the prevalence of stress, anxiety, and depression levels among participants (Table 1). Stress levels vary: normal (41.30%), mild (18.30%), moderate (17.30%), severe (12.50%), and extremely severe (10.60%), with an average score of 16.69 ± 11.088. Anxiety levels are distributed as follows: normal (38.50%), mild (18.30%), moderate (20.20%), severe (17.30%), and extremely severe (5.80%), with an average score of 9.95 ± 6.331. Depression levels show: normal (41.30%), mild (21.20%), moderate (22.10%), severe (9.60%), and extremely severe (5.80%), with an average score of 11.31 ± 7.749.

Table 1: Behavioral characteristics of the participants.

	Stress	Anxiety	Depression
Score, Mean ± SD	16.69 ± 11.088	9.95 ± 6.331	11.31 ± 7.749
Categories, N (%)			
Normal	41.30	38.50	41.30
Mild	18.30	18.30	21.20
Moderate	17.30	20.20	22.10
Severe	12.50	17.30	9.60
Extremely severe	10.60	5.80	5.80

The mental health of participants was evaluated using the Maslach subscale, measuring Emotional Exhaustion, Depersonalization, and Personal Accomplishment. Average scores for these subscales were 21.28 ± 9.763, 10.02 ± 4.849, and 32.85 ± 6.607, respectively (Table 2). Results show that 31.70% reported low Emotional Exhaustion, 11.50% low Depersonalization, and 32.85 ± 6.607% low Personal Accomplishment. Conversely, 25% experienced high Emotional Exhaustion, 35.60% high Depersonalization, and 10.60% high Personal Accomplishment.

Table 2: Emotional Exhaustion, Depersonalization, and Personal Accomplishment statu of the participants.

	Emotional Exhaustion	Depersonalization	Personal Accomplishment
Score, Mean ± SD	**21.28 ± 9.763**	**10.02 ± 4.849**	**32.85 ± 6.607**
Categories, N (%)			
Low degree	31.70	11.50	51
Moderate Degree	43.30	52.90	38.50
High Degree	25	35.60	10.60

3.1 Correlation analysis between the three dimensions of burnout, sociodemographic, and psycho-emotional characteristics.

Table 3 presents correlation findings. Age correlates positively with stress, emotional exhaustion, and personal accomplishment, but negatively with depression. The number of results correlates positively with emotional exhaustion and negatively with personal accomplishment. Anxiety and salary correlate positively with emotional exhaustion, while only anxiety negatively correlates with personal accomplishment. Stress correlates positively with emotional exhaustion and negatively with personal accomplishment. Anxiety correlates positively with depersonalization. However, no significant correlation exists between depression and professional stress factors (i.e., emotional exhaustion, depersonalization, and personal accomplishment).

Table 3: Correlation analysis between the three dimensions of burnout and sociodemographic and psycho-emotional characteristics.

Variable		Stress	Anxiété	Dépression	SEE	SD	SAP
Age	Pearson correlation	0.221	0.065	-0.57	0.065	-0.348	0.271
	P value	0.048	0.071	0.563	0.012	0.000	0.005
Number of hours	Pearson correlation	0.010	-0.80	-0.137	0.215	-0.118	-0.538
	Sig.	0.924	0.421	0.166	0.028	0.232	0.00
Salary	Corrélation de Pearson	-0.42	-0.081	-0.173	0.058	-0.033	0.135
	Sig.	0.031	0.413	0.080	0.008	0.743	0.171
Length of Service	Pearson correlation	0.186	-0.033	-0.106	0.249	-0.037	-0.269
	Sig.	0.025	0.139	0.285	0.011	0.706	0.006
Stress	Pearson correlation	1	0.127	0.175	0.134	0.088	-0.098
	Sig.		0.199	0.076	0.017	0.374	0.023
Anxiety	Pearson correlation	0.127	1	0.313	0.078	0.000	-0.126
	Sig.	0.199	--	0.001	0.029	0.997	0.203
Depression	Pearson correlation	0.175	0.313	1	-0.063	-0.030	-0.030
	Sig.	0.076	0.001	--	0.528	0.763	0.763
Emotional Exhaustion	Pearson correlation	0.134	0.078	-0.063	1	0.448	0.042
	Sig.	0.017	0.029	0.528	--	0.000	0.672
Depersonalization	Pearson correlation	0.088	0.000	-0.030	0.448	1	-0.073
	Sig.	0.374	0.997	0.763	0.000	--	0.460
Personal Accomplishment	Pearson correlation	-0.098	-0.126	-0.030	0.042	-0.073	1
	Sig.	0.023	0.203	0.763	0.672	0.460	--

3.2 Hierarchical regression analyses of the variables predicting the 3 dimensions of professional burnout

Table 4 presents the results of hierarchical regression predicting Emotional Exhaustion based on sociodemographic characteristics and mental health features (stress, anxiety, and depression) of educators. The findings from the first model were statistically significant (R2 = 0.122; F(6, 97) = 2.242; p = 0.015), indicating that age, number of hours worked, and salary accounted for approximately 12.2% of the variance in professional burnout.

In the second model, the results were also statistically significant (ΔR² = 0.036; R2 = 0.158; F(9, 94) = 1.360; p = 0.047), showing that the inclusion of psycho-emotional factors (stress and anxiety) increased the explained variance in Emotional Exhaustion by 3.6% beyond sociodemographic variables. Regression coefficients revealed that family situation, stress, and anxiety were significant predictors. Additionally, coefficients for age, number of hours worked, and salary remained significant in the second model.

Table 5 summarizes the results of hierarchical regression predicting depersonalization based on sociodemographic characteristics and psycho-emotional among educators. In the first model, statistically significant results were observed (R2 = 0.157; F(6, 97) = 3.012; p = 0.010), indicating that age, tenure, and salary accounted for approximately 15.7% of the variance in depersonalization.

In the second model, the results were also statistically significant (ΔR² = 0.013; R2 = 0.170; F(9, 94) = 2.850; p = 0.034), suggesting that adding stress as a psycho-emotional factor to the model notably increased the explained variance in depersonalization beyond the sociodemographic variables by 1.3%. The regression coefficients showed that only stress was statistically significant in this model. Moreover, the regression coefficients for age and tenure remained significant in the second model.

Table 4: Results of the two-step hierarchical regression analyses of the variables predicting Emotional Exhaustion.

Model	Emotional Exhaustion			
	B	Erreur Standard	β	P value
Model 1				
Gender	1.249	2.132	0.062	0.559
Age	-0.079	145	-0.066	0.019
Family situation	-3.191	1.791	-0.186	0.078
Number of hours	1.410	1.146	0.148	0.041
Length of Service	0.411	0.171	0.311	0.081
Salary	-0.882	1.364	-0.074	0.020
R^2 = 0.122 ; $F_{(6, 97)}$=2.242 ; p = 0.015				
Model 2				
Age	0.914	2.129	0.046	0.011
Gender	-0.094	0.145	-0.079	0.518
Family situation	-4.010	1.871	-0.233	0.035
Number of hours	1.415	1.142	0.149	0.038
Length of Service	0.417	0.172	0.315	0.117
Salary	-0.836	1.367	-0.070	0.042
Stress	0.077	0.086	0.088	0.048
Anxiety	0.275	0.164	0.178	0.037
Depression	-0.126	0.129	-0.100	0.331
$ΔR^2$ = 0.036 ; R^2 = 0.158 ; $F_{(9, 94)}$=1.360 ; p = 0.047				

Abbreviations: B = Unstandardized regression coefficients; SE = Standard error; β = Standardized regression coefficients; R2 = Total explained variance; ΔR2 = Change in variance explained per step; F = Variance ratio.

Table 5: Results of the two-step hierarchical regression analyses of the variables predicting Depersonnalization

Model	Depersonnalization			
	B	Erreur Standard	β	P value
Model 1				
Gender	0.250	1.037	0.025	0.810
Age	-0.246	0.071	-0.418	0.001
Family situation	-0.698	0.872	-0.082	0.426
Number of hours	-0.185	0.558	-0.039	0.740
Ancienneté	0.155	0.083	0.236	0.035
Salary	-0.058	0.664	-0.010	0.044
R^2 = 0.157 ; $F_{(6, 97)}$= 3.012 ; p =0.010				
Model 2				
Gender	0.185	1.050	0.019	0.861
Age	-0.249	0.072	-0.422	0.001
Family Situation	-0.838	0.923	-0.098	0.367
Nb of hours	-0.194	0.563	-0.041	0.732
Length of Service	0.151	0.085	0.230	0.048
Salairy	-0.058	0.674	-0.010	0.132
Stress	0.034	0.042	0.078	0.026
Anxiéty	0.054	0.081	0.070	0.106
Depression	-0.049	0.064	-0.079	0.443
ΔR^2 = 0.013 ; R^2 = 0.170 ; $F_{(9, 94)}$=2.850 ; p =0.034				

Abbreviations: B = Unstandardized regression coefficients; SE = Standard error; β = Standardized regression coefficients; R2 = Total explained variance; ΔR2 = Change in variance explained per step; F = Variance ratio.

Table 6 presents the results of hierarchical regression predicting Personal Accomplishment based on sociodemographic characteristics and psycho-emotional factors (stress, anxiety, and depression) among educators. In the first model, statistically significant results were found (R2 = 0.336; F(6, 97) = 8.180; p = 0.000), indicating that age, number of hours worked, and tenure accounted for approximately 33.6% of the variance in Personal Accomplishment.

In the second model, the results were also statistically significant (ΔR² = 0.031; R2 = 0.367; F(9, 94) = 6.053; p = 0.000), suggesting that adding stress as a psycho-emotional factor to the model notably increased the explained variance in Personal Accomplishment beyond the sociodemographic variables by 3.1%. The regression coefficients showed that only stress was statistically significant in this model. Moreover, the regression coefficients for age, tenure, and number of hours worked remained significant in the second model.

Table 6: Results of the two-step hierarchical regression analyses of the variables predicting Accomplissement Personnel

Model	Accomplissement Personnel			
	B	Erreur Standard	B	P value
Model 1				
Gender	2.283	1.254	0.168	0.072
Age	0.055	0.086	0.069	0.018
Family situation	1.224	1.054	0.105	0.249
Number of hours	3.881	0.674	0.603	0.000
seniority	-0.044	0.101	-0.049	0.045
Salary	-0.594	0.803	-0.073	0.461
R^2 = 0.336 ; $F_{(6, 97)}$= 8.180 ; p =0.000				
Model 2				
Age	2.492	1.249	0.183	0.049
Gender	0.065	0.085	0.081	0.447
Family situation	1.692	1.098	0.145	0.127
Number of hours	3.862	0.670	0.600	0.000
Aseniority	-0.045	0.101	-0.050	0.056
Salary	-0.659	0.802	-0.082	0.414
Stress	-0.056	0.050	-0.094	0.021
Anxiety	-0.164	0.096	-0.157	0.091
Depression	0.054	0.076	0.063	0.481
ΔR^2 = 0.031 ; R^2 = 0.367 ; $F_{(9, 94)}$=6.053 ; p =.000				

Abbreviations : B = Unstandardized Regression Coefficients; SE = erreur standard ; = Standardized Regression Coefficients; R2 = explained total variance; ΔR2 = Stepwise Explained Variance; F : Variance Ratio.

3.3 The effects of different degrees of stress, anxiety, and depression on the three dimensions of professional burnout among educators: multiple comparisons.

The statistical analysis showed a significant difference between educators who experienced a severe level of stress (p = 0.033) and extremely severe level of stress (p = 0.007) compared to the normal group in terms of their scores for personal exhaustion (Figure 1A). Additionally, the results revealed significant differences in depersonalization (Figure 1B) and personal accomplishment (Figure 1C) among the groups of educators experiencing severe (p = 0.024) and extremely severe stress (p = 0.005) compared to those with normal stress levels
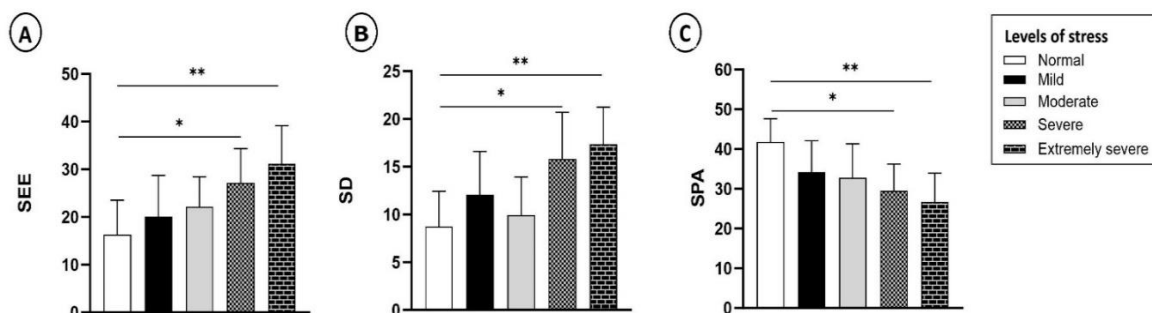
Figure 1: The levels of Emotional Exhaustion, depersonalization, and personal accomplishment based on the degree of stress are presented as mean ± SD. The significance levels are denoted as *p<0.05 and **p<0.01, indicating the comparison between normal stress levels and mild, moderate, severe, and extremely severe stress levels.

The figure 2 displays the variations in scores for the three dimensions of professional burnout. The obtained results revealed significant differences in the scores of Emotional Exhaustion (Figure 2A) and Personal Accomplishment (Figure 2C) (p = 0.041) between the groups with severe and extremely severe levels of anxiety compared to the group with a normal level of stress. On the other hand, the statistical analysis did not reveal any significant difference in Depersonalization scores between the groups studied.
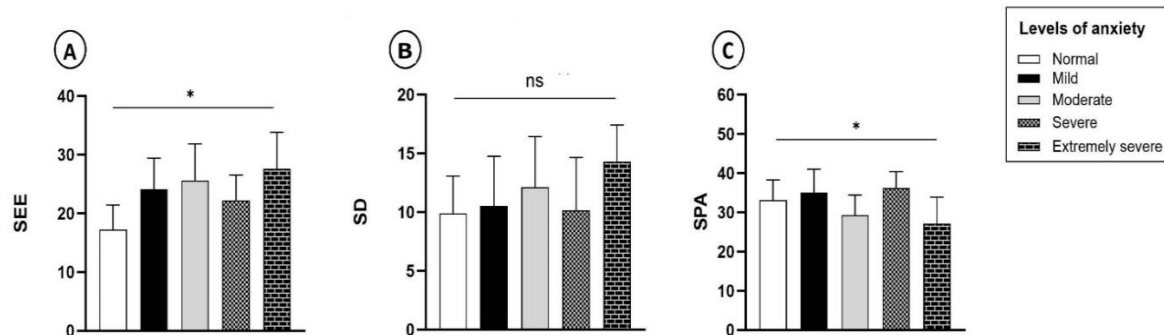
Figure 2: The levels of Emotional Exhaustion, depersonalization, and personal accomplishment based on the degree of anxiety are presented as mean ± SD. The significance levels are denoted as *p<0.05 and **p<0.01, indicating the comparison between normal stress levels and mild, moderate, severe, and extremely severe stress levels.

The figure (Figure 3) illustrates the variations in scores for the three dimensions of professional burnout based on different levels of depressive symptoms. The results obtained indicated a significant difference in the Emotional Exhaustion (EP) score (p = 0.021) between the groups with extremely severe levels of depression and the normal group. Furthermore, the results revealed a significant difference in the Personal Accomplishment (SAP) score between the groups with severe (p = 0.043) and extremely severe (p = 0.007) levels of depressive symptoms compared to the group without depressive symptoms. However, the statistical analysis did not show any significant difference in the Depersonalization (SD) scores between the groups under study.
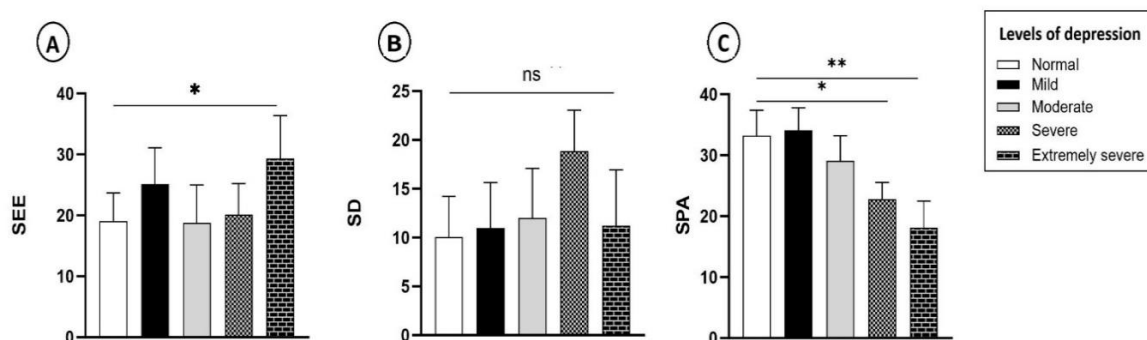
Figure 3: The levels of Emotional Exhaustion, depersonalization, and personal accomplishment based on the degree of depression are presented as mean ± SD. The significance levels are denoted as *p<0.05 and **p<0.01, indicating the comparison between normal stress levels and mild, moderate, severe, and extremely severe stress levels.

4. DISCUSSION

Professional burnout is often regarded as a consequence of occupational stress among social service workers, including teachers. Maslach and Jackson theorized professional burnout as a multidimensional syndrome, encompassing emotional exhaustion, depersonalization, and reduced personal accomplishment (19). Therefore, the main objective of the present study was twofold: (1) To examine risk factors related to emotional exhaustion among educators working in autism units in Morocco, with a particular emphasis on psycho-emotional aspects. (2) To assess differences in the intensity of the three dimensions of emotional exhaustion based on levels of stress, anxiety, and depression among these educators.

This research aims to contribute to a better understanding of factors influencing professional burnout among special education professionals in Morocco, focusing on psychological and emotional aspects. Despite their relative youth, newly graduated teachers were more vulnerable to professional burnout. The management and monitoring of student behaviors, increased demands in the parent-teacher relationship, and slower progress due to students' cognitive deficits are key aspects to consider. Class and mentoring parameters vary significantly between the two possible options for educating autistic students, whether in a regular classroom or in a specialized environment (13).

Our research involved the analysis of 104 special educators working in autism units. The results of our study revealed extremely high stress rates, surpassing the 50% mark. Additionally, our conclusions highlighted abnormally high levels of emotional exhaustion, reaching even over 70%, as well as significant levels of anxiety and depression. These findings align with previous research indicating that nearly 50% of teachers experienced a decrease in their energy levels during the school year. Furthermore, approximately 60% of teachers reported feeling symptoms of professional burnout at least once a month, while 20% reported experiencing these symptoms at least once a week (14).

The increased workload of special education teachers reflects the reality of the contemporary professional world, where they must shoulder more responsibilities, engage more intensively, produce quickly and efficiently while maintaining reasonable costs. This situation is even more pronounced for special education teachers, who must manage students with increasingly complex needs, particularly those with autism. Consequently, special education teachers are constantly required to adapt and perform their jobs with great precision.

The results of our study suggest that gender is not a risk factor for emotional exhaustion, lack of personal accomplishment, and depersonalization. The question of the role of gender in the emergence of professional burnout remains a subject of debate. This uncertainty may be attributed to the physical and emotional vulnerability of individuals or to potential difficulties in managing work due to other social constraints. It is also possible that women feel constant pressure to balance their professional and family lives, both of which are equally important to them. The high female participation (92.4%) in the study on autism spectrum disorders (ASD) may have influenced the results (13). It is essential to note that the teachers involved in this study did not seem to be particularly affected by professional burnout, as evidenced by the relatively low to moderate average scores in the sample.

The results of the present study showed that age is positively correlated with emotional exhaustion and personal accomplishment, while it is negatively correlated with depersonalization. Furthermore, hierarchical regression results showed that age is a risk factor for emotional exhaustion, personal accomplishment, and depersonalization, confirming the correlation results. The results of another study did not reveal significant differences between age and education level concerning the sub-scales of professional burnout, job satisfaction, and mental health (23).

Regarding the number of working hours and seniority, the results revealed a positive correlation with emotional exhaustion and a negative correlation with personal accomplishment. According to some authors, burnout decreases with professional seniority, with an incidence peak early in one's career, specified within the first 5 years of activity for most studies (15).

In our study, over 70% of educators reported being stressed due to workload overload. This aligns with findings from two studies conducted in Tunisia and France, which reported that the most significant stress factor was workload overload, estimated at 70% (16, 17). Furthermore, the correlation results between psycho-emotional factors and professional stress factors indicated a positive correlation between stress and anxiety with emotional exhaustion. Additionally, there was a negative correlation between stress and personal accomplishment, and a positive correlation between anxiety and depersonalization. However, no significant correlation was observed between depression and professional stress factors (namely emotional exhaustion, depersonalization, personal accomplishment).

The results of a recent study demonstrated a significant association between professional burnout and depression ($r = 0.520$, SE = 0.012, 95% CI = 0.492, 0.547) and between professional burnout and anxiety ($r = 0.460$, SE = 0.014, 95% CI = 0.421, 0.497). Nevertheless, moderation analysis for the burnout–depression and burnout–anxiety relationships revealed that studies using the MBI test or those assessed as higher quality exhibited smaller effect sizes (18).

As an illustrative example, Maske et al. found that 59% of individuals diagnosed with professional burnout also received a diagnosis of an anxiety disorder, 58% of an affective disorder, namely depression or a depressive episode, and 27% of a somatoform disorder (21). In other words, the similarities between burnout and depression, as well as burnout and anxiety, could lead to misdiagnosis, or burnout might be overlooked due to these similarities, resulting in misguided treatment for affected individuals. Indeed, the findings of Koutsimani et al. suggest that studies using measures other than the MBI burnout tool might artificially inflate the association between burnout and depression and burnout and anxiety (18). Maslach and Leiter argued that while studies confirm that professional burnout and depression are not independent, claiming that they are simply the same mental illness lacks support from accumulated evidence (20).

Furthermore, in the present study, the comparison of means for the three dimensions of professional burnout across groups based on stress, anxiety, and depression scores was analyzed. In comparison to the group of participants with a normal level of stress, a significant increase in Personal Burnout, Depersonalization, and Personal Accomplishment was observed in groups exhibiting severe and extremely severe stress symptoms. However, no significant differences were found between the other groups compared to the group of participants with a normal level of stress. Regarding

the levels of anxiety and depression, the results showed a significant difference in Personal Burnout and Personal Accomplishment only in the group of 94 participants with extremely severe anxiety and depression ($p<0.05$).

The teaching profession accumulates numerous challenges, and some Tunisian teachers in special education cannot withstand this professional stress, leading to the development of burnout. This syndrome causes psychological distress for teachers, with the risk of increased absenteeism at work (16). Thus, we hope that this study will pave the way for future research on stress, coping, and professional burnout among Moroccan teachers, with both theoretical objectives and practical applications to prevent and reduce the risk of this issue. Regarding the biological similarity of the two constructs, Bakusic et al. in their systematic review, discovered that professional burnout and depression seem to share a common biological basis (22). Specifically, according to the researchers, epigenetic studies seem to support a probable mediator, namely DNA methylation, which could act as a biomarker for stress-related mental disorders such as depression, professional burnout, and chronic stress. Therefore, we can observe that besides the common psychological characteristics that these two constructs seem to share, they also appear to share a common biological basis.

In conclusion, this study underscores the intricate interplay of factors influencing educators' well-being in autism units, advocating for targeted interventions and support systems to promote their mental health and professional resilience. These findings contribute to the broader discourse on educator well-being, providing a foundation for tailored strategies to enhance the overall quality of education and support systems in autism units.

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