

Research



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Received: 07 Jan 2025 - **Accepted:** 02 Jan 2026 - **Published:** 12 Jan 2026

Keywords: Motivation, intrinsic motivation, extrinsic motivation, amotivation, academic performance, clinical performance, nursing students

Funding: This work received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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Cite this article: Mohamed Suiyhi et al. The effects of motivation on the academic and clinical performance among nursing students. PAMJ-One Health. 2026;19(1). 10.11604/pamj-oh.2026.19.1.46462

Available online at: <https://www.one-health.panafrican-med-journal.com/content/article/19/1/full>

The effects of motivation on the academic and clinical performance among nursing students

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Abstract

Introduction: motivation plays a fundamental role in student engagement and in triggering learning behaviors that have a direct impact on academic performance. The aim of our study was therefore to examine the influence of motivation on the academic and clinical performance of nursing students. **Methods:** a descriptive cross-sectional study was conducted on a sample of 246 nursing students at the Higher Institute of Nursing Professions and Health Techniques (HINPHT) of Taza City, Morocco, who completed a questionnaire including socio-demographic characteristics and the French motivation scale “Échelle de motivation en éducation (ÉMÉ-S 28) - Études secondaires,” consisting of 28 items divided into seven motivational subscales. Students' academic and clinical performance was measured through their grades in theoretical modules and clinical internships. Data analysis included descriptive statistics and quantile linear regression to examine the influence of motivation on the students' academic and clinical performance. **Results:** among the surveyed students, 179 were female (72.8%) and 67 were male (27.2%). The average age of the students was 20.15 years ($SD = 1.69$). The main regression results show that dimensions with a positive impact on performance include intrinsic motivation to know (IMKN) for academic performance (with coefficients of 0.808, 1.052, and 0.940 at quantiles $q = 0.25$, $q = 0.50$, and $q = 0.75$, respectively) and intrinsic motivation to stimulate (IMST) for clinical performance (with coefficients of 0.393, 0.609, and 0.661 at quantiles $q = 0.25$, $q = 0.50$, and $q = 0.75$, respectively). In addition, extrinsic motivation by external regulation (EMEXR) also contributed positively to clinical performance (with coefficients of 0.690,

0.674, and 0.630 at quantiles $q = 0.25$, $q = 0.50$, and $q = 0.75$, respectively). Dimensions with a negative impact include amotivation (AMOT), which is associated with particularly low academic performance (with coefficients of -1.020, -1.013, and -0.952 at quantiles $q = 0.25$, $q = 0.50$, and $q = 0.75$, respectively), and extrinsic motivation by identified regulation (EMIDR), which is linked to lower academic and clinical outcomes (with coefficients of -0.520, -0.616, and -0.756 at quantiles $q = 0.25$, $q = 0.50$, and $q = 0.75$, respectively, for academic performance, and -0.294, -0.309, and -0.307, respectively, for clinical performance). **Conclusion:** our study highlights the importance of balancing intrinsic and extrinsic motivation while emphasizing the crucial role of stakeholders in the clinical learning environment to maximize the potential of nursing students.

Introduction

Motivation is a hypothetical variable that describes the internal and/or external forces behind the initiation, direction, intensity, and persistence of behaviors [1]. The topic of motivation, as a central element of psychology, has received increasing attention in the field of education in recent decades [2,3]. In the context of learning, motivation is seen as a dynamic state that derives from students' perception of their environment and selves, and drives them to choose an activity, commit to it, and strive to carry it out to achieve a goal [4]. It is mainly based on students' self-perception, self-esteem, perceived competence and efficacy, sense of self-efficacy, interest in academic studies, and achievement goals [5].

According to self-determination theory (SDT) [6,7], which is considered the most relevant motivational theory in the field of education [8], there are three types of motivation: 1) intrinsic motivation, which refers to the pleasure and satisfaction derived from accomplishing a task, 2) extrinsic motivation, linked to the intention to obtain a consequence not found in the activity

itself, such as the search for a reward or the avoidance of something unpleasant at the end of the activity, and 3) a motivation, which corresponds to the absence of motivation, in which the individual is in a state of renunciation and makes no connection between task performance and the results obtained [9-14].

While motivation plays an inescapable role in the engagement and initiation of learning behaviors, several research studies have demonstrated that it is also linked to academic performance [15-17]. Motivation is indeed considered a key predictor and determinant of academic performance and success [18-22]. With that being said, the nursing education process encompasses not only theoretical knowledge but also practical skills acquired through clinical learning, which plays an essential role in enriching future professional skills [23,24]. We can therefore distinguish two kinds of performance that characterize nursing learning: on the one hand, academic performance linked to theoretical knowledge, and on the other, clinical performance reflecting practical skills acquired in the field. These two types of performance are closely linked to the intensity of training and the multiple demands in terms of knowledge, abilities, clinical skills, and attitudes that student nurses must meet, enabling them to be better prepared to care for patients in a complex working environment [25]. This complexity, which characterizes the training of future nurses, therefore underlines the need to study motivation in this context in order to support students in managing the multiple challenges they encounter throughout their training [26].

In Morocco, nursing training is currently provided by the "Higher Institutes of Nursing Professions and Health Techniques (HINPHT), higher education establishments that are not part of a university system [27]. This training is organized into three cycles: Professional Bachelor, Master and Doctorate. In the Bachelor cycle, teaching consists of a series of modules organized by semester, including theoretical courses, practical work,

tutorials, projects, or internships, thus constituting a truly complex academic environment. Our study therefore aims to clarify the effects of different types of motivation on the academic and clinical performance of nursing students by choosing the HINPHT of Taza as the study environment. This objective seeks to explore how various forms of motivation, including intrinsic motivation, extrinsic motivation, and a motivation, relate to student outcomes in both theoretical learning and clinical practice in order to inform more targeted and effective educational approaches.

Methods

Study design and setting: this is a descriptive cross-sectional study that aimed to examine the influence of motivation on both academic and clinical performance among nursing students.

Participants and inclusion criteria: the study was conducted among all students enrolled in the academic year 2023/2024 at the Higher Institute of Nursing Professions and Health Techniques in Taza, totaling 294 students. Inclusion criteria for the study were the consent to participate, the presence during the survey, and the requirement that the program include both theoretical courses and practical training. As a result, students in the midwifery speciality were excluded from the study, as they had no clinical training during the 2023/2024 academic year.

Data and measurement resources: a self-administered questionnaire was distributed to students, consisting of two sections: the first section collected sociodemographic characteristics (gender, age, marital status, and speciality), while the second section explored the students' motivation using the "*Échelle de motivation en éducation (ÉMÉ-S 28)- Études secondaires*," a French scale consisting of 28 items [28]. This scale is an adaptation of the Scale of Motivation in Education (EME), originally developed by Vallerand *et al.* [8], and is based on Deci and Ryan's self-determination theory model [7]. It

assesses three dimensions of motivation, represented by a set of seven subscales, as follows: 1) Intrinsic motivation, comprising intrinsic motivation to know (IMKN) (items 2, 9, 16, 23), intrinsic motivation to accomplish (IMAC) (items 6, 13, 20, 27), and intrinsic motivation to stimulate (IMST) (items 4, 11, 18, 25). 2) Extrinsic motivation, which includes extrinsic motivation by identified regulation (EMIDR) (items 3, 10, 17, 24), extrinsic motivation by introjected regulation (EMINR) (items 7, 14, 21, 28), and extrinsic motivation by external regulation (EMEXR) (items 1, 8, 15, 22). 3) Amotivation (AMOT), represented by scale items 5, 12, 19, and 26. For each of the 28 items, the student is asked to choose a response on a 5-point Likert scale: 1) not at all in agreement, 2) a little in agreement, 3) moderately in agreement, 4) somewhat in agreement 5) completely in agreement, in order to assess the extent to which the proposed statement corresponds to a reason justifying further study at the HINPHT. Finally, to measure students' academic and clinical performance, we used grades from theoretical modules and those from students' clinical/practical training for the 2023/2024 academic year.

Data collection procedures: after pre-testing the questionnaire with a set of 20 students and developing a nominative list of validated and functional email addresses for all students, an online link to the questionnaire was made available to students via Google Forms starting on March 01, 2024. The link was shared in the WhatsApp groups of each class, with regular reminders. All questionnaire items were mandatory to prevent missing responses. For student grades, we obtained a database containing the grades for both theoretical and practical modules from the coordinators responsible for each specialty. The survey was closed on July 30, 2024.

Sample size and sampling procedure: using a voluntary sampling technique [29], from the target population of 294 students enrolled at the HINPHT of Taza, a total of 246 students were surveyed. It

should be noted that this same sample had previously been used in a published study investigating the impact of academic workload and perceived stress on the levels of anxiety and depression among nursing students [30]. Yamane's formula was used to determine the final sample size [31], with the following calculation:

$$n = \frac{N}{1 + N(E)^2}$$

Where N represents the target population size and E the margin of error, which in this case was 0.05 (5%), corresponding to a confidence level of 95%. So, to determine the sample size, we applied the following formula:

$$n = \frac{294}{1 + 294(0.05)^2}$$

Calculate;

$$n = \frac{294}{1 + 294(0.05)^2} = \frac{294}{1 + 0.735} = \frac{294}{1.735} \approx 170$$

The theoretical sample size (n) was therefore 170 students. However, 246 students actually took part in our survey. This discrepancy may positively impact the accuracy of the results and enhance the generalizability of the conclusions to the entire target population.

Data analysis: data were extracted from Google Forms, then verified, coded, and entered into Microsoft Excel (Excel version 2016), as well as into the Statistical Package for the Social Sciences (SPSS version 27). The answers to the items on the amotivation scale (ÉMÉ-S 28) were rated on a Likert scale ranging from 0 to 5. The scores for each of the 7 subscales were obtained by summing the scores of the items within each subscale and then dividing the sum by the number of items to obtain the mean. These scores range from 0 to 5. The calculation of these subscale scores allowed us to identify the scores for the three dimensions of amotivation: intrinsic motivation, extrinsic

amotivation, and amotivation. This was done by summing the scores of the subscales that constitute each dimension and then dividing the sum by the number of subscales to obtain the mean. These scores also range from 0 to 5. The answers collected from the questionnaire were linked to the students' grades database using the nominative list of email addresses to match each grade with the corresponding student. The academic grade was obtained by calculating the average of the theoretical module grades, while the clinical grade corresponds to the average of grades for clinical and practical internships. Both types of grades are given on a scale from 0 to 20.

For the statistical analyses, we used both descriptive statistics, such as frequency (n), percentages (%), arithmetic mean (M), and standard deviation (SD), and quantile regression as an inferential statistical method [32] to examine the influences of the various amotivational co-variables from the ÉMÉ-S 28 amotivation scale on academic and clinical grades. To address the heteroscedasticity identified in our data, the use of this type of regression was essential to attenuate the impact of outliers and to perform an overall selection of variables [33,34]. Accordingly, four quantile linear regression models were used: 1) The first model examines the effect of the three main dimensions of the ÉMÉ-S 28 amotivation scale (intrinsic, extrinsic, and demotivation), as independent variables, on the academic grade as the dependent variable. 2) The second model explores the effect of the same three dimensions of amotivation, but this time on clinical grade as the dependent variable. 3) The third model analyzes the impact of the seven ÉMÉ-S 28 amotivation subscales (IMKN, IMAC, IMST, EMIDR, EMINR, EMEXR, AMOT) as independent variables on the academic grade as the dependent variable. 4) The fourth model examines the effect of these seven subscales on the clinical grade as the dependent variable. Statistical analyses were performed using SPSS software (version 27), with a significance level of 5%.

Ethical considerations: the approval for this study was obtained from the administration of the HINPHT of Taza on the basis of strict adherence to ethical principles throughout the study, in particular, the assurance that any information provided by participants or documentation consulted would remain confidential and would be used strictly for scientific research purposes. The consent of the participating students was obtained, and their participation was entirely voluntary.

Results

General characteristics of participants: a total of 246 students participated in our study. Among them, 179 participants were female, representing 72.8% of the sample, while 67 participants were male, accounting for 27.2%. The average age of participants was 20.15 years (standard deviation = 1.69), with a minimum age of 18 years and a maximum age of 28 years. Regarding marital status, the majority of participants were single (244, or 99.2%). Lastly, in terms of speciality, 159 participants (or 64.6%) were in the polyvalent nurse speciality, while 87 participants (or 35.4%) were in the family and community health nurse speciality (Table 1).

Descriptive analysis of academic and clinical grades: the academic grades have a mean of 13.45 and a standard deviation of 2.42, while the clinical grades have a mean of 14.26 and a standard deviation of 1.55 (Table 1). Therefore, clinical grades are slightly higher on average, while the academic grades show a greater dispersion of scores.

Descriptive analysis of the three main amotivational dimensions: the surveyed students generally appear to be more extrinsically motivated than intrinsically motivated, with low amotivation observed in comparison to these two dimensions. Indeed, intrinsic amotivation, with a mean of 3.12, shows moderate dispersion (standard deviation = 0.64). Extrinsic amotivation,

with a slightly higher mean of 3.21, is characterized by even lower dispersion (standard deviation = 0.61). As for amotivation, it has the lowest mean (2.17) but the highest dispersion (standard deviation = 1.03) (Table 1).

Analysis of the influence of the main amotivational dimensions of the ÉMÉ-S 28 scale on academic performance: the results obtained through the first regression model, presented in Table 2, reveal that intrinsic amotivation is positively related to students' academic grades for all quantiles ($q = 0.25$, $q = 0.50$, $q = 0.75$), with respective coefficients of 1.850 ($p < 0.001$), 2.137 ($p < 0.001$), and 2.744 ($p < 0.001$). As for extrinsic amotivation, it is negatively associated with students' academic grades for the $q = 0.25$ and $q = 0.75$ quantiles, with coefficients of -0.918 ($p = 0.002$) and -1.034 ($p = 0.003$), while for the $q = 0.50$ quantile, a coefficient of -0.429 is observed, but it is not significant ($p = 0.228$). For the last dimension, the regression model shows that amotivation levels are negatively associated with students' academic grades for all quantiles ($q = 0.25$, $q = 0.50$, $q = 0.75$), with coefficients of -1.220 ($p < 0.001$), -1.069 ($p < 0.001$), and -0.858 ($p < 0.001$).

Analysis of the influence of the main amotivational dimensions of the ÉMÉ-S 28 scale on clinical performance: the second quantile regression model, illustrated in Table 3, shows that intrinsic amotivation is positively related to students' clinical grades across all quantiles ($q = 0.25$, $q = 0.50$, $q = 0.75$), with respective coefficients of 1.256 ($p < 0.001$), 1.513 ($p < 0.001$), and 1.599 ($p < 0.001$). For extrinsic amotivation, the coefficients observed are very close to zero and the p-values are high: -0.012 ($p = 0.956$) for the quantile $q = 0.25$, -0.081 ($p = 0.780$) for $q = 0.50$, and -0.200 ($p = 0.522$) for $q = 0.75$. These results suggest that there is no statistically significant impact of extrinsic amotivation on students' clinical grades in this analysis. Regarding amotivation, the results are also insignificant at all quantiles, although the coefficients are negative for quantiles $q = 0.25$ and $q = 0.75$, with

coefficients of -0.001 ($p = 0.993$) and 0.186 ($p = 0.172$), respectively. The coefficient for $q = 0.50$ was slightly positive at 0.202, but with a p-value of 0.109, indicating no significant relationship between amotivation and clinical performance.

Analysis of the influence of the seven subscales of the ÉMÉ-S 28 scale on academic performance: as shown in Table 4, the variables most frequently significant at each quantile are IMKN, EMIDR, and AMOT, with contrasting effects. Specifically, intrinsic amotivation to know (IMKN) is significant across all quantiles ($q = 0.25$, $q = 0.50$, $q = 0.75$), with positive coefficients, indicating that it is a favorable factor for academic performance: at $q = 0.25$, the coefficient is 0.808 ($p < 0.001$); at $q = 0.50$, it is 1.052 ($p < 0.001$); and at $q = 0.75$, it is 0.940 ($p < 0.001$). In contrast, extrinsic amotivation by identified regulation (EMIDR) is also significant at all quantiles but displays negative coefficients, suggesting that this form of amotivation is associated with lower academic performance: at $q = 0.25$, the coefficient is -0.520 ($p < 0.001$); at $q = 0.50$, it is -0.616 ($p < 0.001$); and at $q = 0.75$, it is -0.756 ($p < 0.001$). Finally, amotivation (AMOT) has particularly negative effects on academic performance at all quantiles: at $q = 0.25$, the coefficient is -1.020 ($p < 0.001$); at $q = 0.50$, it is -1.013 ($p < 0.001$); and at $q = 0.75$, it is -0.952 ($p < 0.001$). This indicates that the absence of amotivation is a strong predictor of low academic grades.

Analysis of the influence of the seven subscales of the ÉMÉ-S 28 scale on clinical performance: the fourth quantile regression model, presented in Table 5, illustrates that intrinsic amotivation to stimulate (IMST) is significant at all quantiles, with positive coefficients indicating that it promotes clinical performance: at $q = 0.25$, the coefficient is 0.393 ($p = 0.015$); at $q = 0.50$, it is 0.609 ($p < 0.001$); and at $q = 0.75$, it is 0.661 ($p = 0.007$). Extrinsic amotivation by identified regulation (EMIDR) also has significant negative effects at all quantiles, suggesting that it is associated with lower clinical outcomes: at $q = 0.25$, the coefficient is -0.294 ($p = 0.002$); at $q = 0.50$, it is -0.309 ($p =$

0.001); and at $q = 0.75$, it is -0.307 ($p = 0.031$). Finally, extrinsic amotivation by external regulation (EMEXR) is significant at all quantiles, with positive coefficients: at $q = 0.25$, the coefficient is 0.690 ($p < 0.001$); at $q = 0.50$, it is 0.674 ($p < 0.001$); and at $q = 0.75$, it is 0.630 ($p = 0.020$), suggesting that it improves clinical grade results.

Discussion

In our study, we examined the effects of motivation, with its various components, on the academic and clinical performance of nursing students. The sample in our study is predominantly composed of female students, representing 72.8% (i.e., 179 participants), which reflects a trend commonly observed in healthcare studies, particularly in paramedical and social fields [35]. The majority of students were young (mean age 20.15) and single, which is characteristic of the start of their academic and professional careers. As far as the distribution of students by specialty is concerned, it is only to be expected that the polyvalent nurse specialty has a larger number of students ($n=159$) than the family and community health nurse specialty ($n=87$), due to the longer-established nature of the polyvalent nurse specialty. The results of the descriptive analysis of academic and clinical grades suggest that students exhibit greater consistency in their clinical performance, while their academic performance is more heterogeneous. This latter observation may refer to the diversity of ways in which individuals succeed in an academic context [36].

Regarding the descriptive analysis of the three main motivational dimensions, our study showed that the students surveyed are generally more extrinsically motivated (mean of 3.21, a standard deviation of 0.61) than intrinsically motivated (mean of 3.12, a standard deviation of 0.64), with relatively low levels of amotivation observed in comparison (mean of 2.17, a standard deviation of 1.03). This contrasts with the findings of a study on

the motivational profile of medical students, which found that they are more intrinsically motivated than extrinsically motivated [37].

The analysis of the results of the first two regression models reveals that intrinsic motivation is positively associated with student performance, both academic and clinical, at all quantiles, suggesting that it promotes success in both areas. In contrast, extrinsic motivation and amotivation have no significant impact on clinical grades, whereas for academic performance, amotivation (for all quantiles) and extrinsic motivation (for quantiles $q = 0.25$ and $q = 0.75$) have a negative impact. These results suggest that the absence of motivation or motivation focused on external rewards may particularly hinder academic performance in theoretical modules among the nursing students surveyed. In this regard, intrinsic motivation remains a key factor in academic success, as it provides enjoyment in engaging in an activity and leads students to spend more time developing skills [8,38]. Indeed, students enjoy learning activities more, and their performance increases when they are intrinsically motivated rather than extrinsically [17,39,40]. Conversely, although extrinsic motivation can help students develop effective strategies for achieving their goals, it can lead to less sustainable learning [41].

Furthermore, the results of the regression models regarding the influence of the motivational subscales of the ÉMÉ-S 28 on academic and clinical performance show that intrinsic motivation, particularly in its component related to know (IMKN), promotes academic performance. This component is manifested by the fact that the individual engages in activities for the pleasure of learning new things [42], which promotes a more autonomous and sustained engagement in academic activities [11,13]. On the other hand, when the individual is motivated by the desire to experience particular sensations (fun, exciting, sensory, or aesthetically pleasing), this refers to intrinsic motivation to stimulate (IMST) [8], which, according to our study, exerts a more pronounced impact on clinical performance.

In contrast, our study shows that extrinsic motivation by identified regulation (EMIDR) has a negative impact on grades in both types of performance, suggesting that it is associated with lower academic and clinical performance. This form of motivation is explained by the fact that the behavior is valued and considered important by the individual, and more specifically, that it is perceived as being of their own choice. In this case, the process of internalizing external motives is regulated through identification (Vallerand *et al.* 1989) [8]. Moreover, amotivation (AMOT) was found to be strongly negatively correlated with academic performance, indicating that it is a predictive factor for lower results in the theoretical modules of training among the nursing students surveyed. This is, in fact, an expected consequence related to the absence of both intrinsic and extrinsic motivation, as well as to a very low level of self-determination [43].

Finally, our study highlighted that extrinsic motivation through external regulation (EMEXR) improves clinical performance, with significant positive coefficients, underlining its beneficial effect on clinical internship grades. This component corresponds to the least autonomous type of extrinsic motivation, primarily involving reward-seeking or sanction-avoidance [11]. This implies that nursing students may be motivated by external rewards through interactions with various stakeholders in clinical internships, such as patients, families, healthcare professionals, and supervisors, while developing their practical skills. For example, a student may be encouraged to provide high-quality care to receive positive feedback from patients or meet family expectations. Thus, signs of recognition play a central role in increasing individual performance [44]. Similarly, appraisals from healthcare professionals or supervisors can reinforce the desire to perform exceptionally well. As demonstrated by a study, supervision contributes to the performance and motivation of healthcare staff, particularly in terms of problem-solving, chart review, and observation of clinical

practice. This, in turn, enhances patient care practices and improves the work environment [45].

Although this study provides important insights into the links between motivation and the academic and clinical performance of nursing students, it has several limitations. Its cross-sectional design does not allow causal relationships to be established, which requires cautious interpretation of the correlations observed. Furthermore, the data were collected at a single institution, limiting the generalizability of the results to other geographical or institutional contexts. Future research should consider a longitudinal approach, diversify study locations, incorporate more variables, and combine qualitative and quantitative methods in order to deepen our understanding of these dynamics.

Conclusion

This research highlights the important influence of motivation, in its various forms, on the academic and clinical performance of nursing students. According to our findings, intrinsic motivation, particularly related to know, plays an essential role in promoting both academic and clinical performance. Students seem to be more engaged in their learning activities, whether theoretical or practical, when they act out of a desire to learn and develop new skills. In contrast, external motivation, particularly by identified regulation, and amotivation have a negative effect, especially on the results of theoretical modules. This highlights the detrimental consequences of relying on external rewards or experiencing a lack of motivation. However, extrinsic motivation by external regulation appears to have a positive impact on clinical performance. This highlights the importance of the clinical environment in stimulating students' motivation and enabling them to achieve higher results during their internship. This dynamic may also be influenced by supervision and assessments, which contribute to improving care practices and fostering a work

environment conducive to success. Thus, our research focuses on integrating educational programs aimed at strengthening students' intrinsic motivation while emphasizing the role of the clinical environment in supporting them. It would also be relevant to explore, in future studies, the combined effects of different types of motivation on performance, considering the sociodemographic profile of students, as well as to assess the impact of personalized support systems on academic and professional success.

What is known about this topic

- *In the context of learning, motivation is considered a dynamic state that arises from students' perceptions of their environment and identity, driving them to choose an activity, commit to it, and strive to complete it in pursuit of a goal;*
- *Extrinsic motivation and amotivation can be detrimental to students' academic performance, while intrinsic motivation promotes better involvement and positive grades and results.*

What this study adds

- *The positive impact of extrinsic motivation by external regulation (EMEXR) on the clinical performance of nursing students; the need for a balance between intrinsic and extrinsic motivation is crucial in the specific context of nursing studies, where students must juggle theoretical and clinical knowledge and skills;*
- *The study offers practical recommendations for nursing trainers and educational administrators, including the promotion of student autonomy, the personalization of learning objectives, and the provision of enhanced support during clinical internships;*

- *It also emphasizes the importance of the assessment of student motivation before the selection of a nursing education pathway, which may assist in guiding newly enrolled baccalaureate students toward informed academic and career orientation.*

Competing interests

The authors declare no competing interests.

Authors' contributions

Mohamed Suiyhi: study design, questionnaire development, data collection, interpretation of the results, manuscript writing. Anouar Alami and Youssef El Madhi: the study design, interpretation of results, writing of the manuscript. Hajar Darif: development of the questionnaire, statistical analysis, and interpretation of the results. Asma Id Babou: interpretation of the results. Zineb Boumaaize: interpretation of the results. All the authors read and approved the final version of this manuscript.

Acknowledgments

The authors wish to thank the administration of HINPHT of Taza annex, as well as the nursing students who actively participated in our study.

Tables

Table 1: description of sociodemographic characteristics, academic and clinical grades, and the three main dimensions of motivation (n=246)

Table 2: quantile linear regression model to analyze the influence of the main motivational dimensions on academic grades

Table 3: quantile linear regression model to analyze the influence of the main motivational dimensions on clinical grades

Table 4: quantile linear regression model to analyze the influence of the seven motivational subscales on academic grades

Table 5: quantile linear regression model to analyze the influence of the seven motivational subscales on clinical grades

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Table 1: description of sociodemographic characteristics, academic and clinical grades, and the three main dimensions of motivation (N=246)

Qualitative variables	Frequency (n)	Percentage (%)
Gender		
Female	179	72.8
Male	67	27.2
Marital status		
Single	244	99.2
Married	1	0.4
Divorced	1	0.4
Speciality		
Polyvalent nurse students	159	64.6
Family and community health nurse students	87	35.4
Quantitative variables	Mean	Standard deviation
Age (years)	20.15	1.69
Academic grade	13.45	2.42
Clinical grade	14.26	1.55
Intrinsic motivation	3.12	0.64
Extrinsic motivation	3.21	0.61
Amotivation	2.17	1.03

Table 2: quantile linear regression model to analyze the influence of the main motivational dimensions on academic grades

Parameter	Coefficient	Standard error	t-statistic	p-value	95% Confidence Interval
Quantile q = 0.25					
Constant	11.946	0.8685	13.754	0.000	[10.235; 13.657]
Intrinsic motivation	1.850	0.2780	6.654	0.000***	[1.302; 2.398]
Extrinsic motivation	-0.918	0.2918	-3.147	0.002**	[-1.493; -0.343]
Amotivation	-1.220	0.1270	-9.606	0.000***	[-1.470; -0.969]
Quantile q = 0.50					
Constant	10.531	1.0554	9.979	0.000	[8.453; 12.610]
Intrinsic motivation	2.137	0.3379	6.326	0.000***	[1.472; 2.803]
Extrinsic motivation	-0.429	0.3545	-1.209	0.228	[-1.127; 0.270]
Amotivation	-1.069	0.1543	-6.926	0.000***	[-1.372; -0.765]
Quantile q = 0.75					
Constant	11.200	1.0437	10.731	0.000	[9.144; 13.256]
Intrinsic motivation	2.744	0.3341	8.212	0.000***	[2.086; 3.402]
Extrinsic motivation	-1.034	0.3506	-2.950	0.003**	[-1.725; -0.344]
Amotivation	-0.858	0.1526	-5.621	0.000***	[-1.158; -0.557]

Dependent variable: academic grade, * Significant at p-value < 0.05, ** Significant at p-value < 0.01, *** Significant at p-value < 0.001

Table 3: quantile linear regression model to analyze the influence of the main motivational dimensions on clinical grades

Parameter	Coefficient	Standard error	t-statistic	p-value	95% Confidence Interval
Quantile q = 0.25					
Constant	9.493	0.6558	14.475	0.000	[8.202; 10.785]
Intrinsic motivation	1.256	0.2100	5.980	0.000***	[0.842; 1.669]
Extrinsic motivation	-0.012	0.2203	-0.055	0.956	[-0.446; 0.422]
Amotivation	-0.001	0.0959	-0.009	0.993	[-0.190; 0.188]
Quantile q = 0.50					
Constant	9.245	0.8603	10.746	0.000	[7.550; 10.939]
Intrinsic motivation	1.513	0.2754	5.495	0.000***	[0.971; 2.056]
Extrinsic motivation	-0.081	0.2890	-0.280	0.780	[-0.650; 0.488]
Amotivation	0.202	0.1258	1.609	0.109	[-0.045; 0.450]
Quantile q = 0.75					
Constant	10.436	0.9301	11.220	0.000	[8.603; 12.268]
Intrinsic motivation	1.599	0.2978	5.371	0.000***	[1.013; 2.186]
Extrinsic motivation	-0.200	0.3125	-0.641	0.522	[-0.816; 0.415]
Amotivation	0.186	0.1360	1.370	0.172	[-0.082; 0.454]
Dependent variable: clinical grade, * Significant at p-value < 0.05, ** Significant at p-value < 0.01, *** Significant at p-value < 0.001					

Table 4: quantile linear regression model to analyze the influence of the seven motivational subscales on academic grades

Parameter	Coefficient	Standard error	t-statistic	p-value	95% Confidence Interval
Quantile q = 0.25					
Constante	10.127	1.0231	9.899	0.000	[8.112; 12.142]
IMKN	0.808	0.2323	3.478	0.001**	[0.350; 1.265]
IMAC	0.431	0.2465	1.748	0.082	[-0.055; 0.916]
IMST	0.472	0.2315	2.040	0.042*	[0.016; 0.929]
EMIDR	-0.520	0.1356	-3.831	0.000***	[-0.787; -0.252]
EMINR	0.228	0.2235	1.020	0.309	[-0.212; 0.668]
EMEXR	0.022	0.2579	0.086	0.932	[-0.486; 0.530]
AMOT	-1.020	0.1563	-6.526	0.000***	[-1.328; -0.712]
Quantile q = 0.50					
Constant	10.678	1.0852	9.841	0.000	[8.541; 12.816]
IMKN	1.052	0.2464	4.271	0.000***	[0.567; 1.538]
IMAC	-0.092	0.2614	-0.352	0.725	[-0.607; 0.423]
IMST	0.268	0.2456	1.091	0.277	[-0.216; 0.752]
EMIDR	-0.616	0.1438	-4.283	0.000***	[-0.899; -0.333]
EMINR	0.620	0.2371	2.614	0.010**	[0.153; 1.087]
EMEXR	0.403	0.2736	1.473	0.142	[-0.136; 0.942]
AMOT	-1.013	0.1658	-6.109	0.000***	[-1.340; -0.686]
Quantile q = 0.75					
Constant	12.359	0.9718	12.718	0.000	[10.445; 14.274]
IMKN	0.940	0.2206	4.261	0.000***	[0.505; 1.375]
IMAC	0.014	0.2341	0.060	0.952	[-0.447; 0.475]
IMST	0.354	0.2199	1.607	0.109	[-0.080; 0.787]
EMIDR	-0.756	0.1288	-5.873	0.000***	[-1.010; -0.503]
EMINR	0.728	0.2123	3.430	0.001**	[0.310; 1.147]
EMEXR	0.132	0.2450	0.539	0.590	[-0.351; 0.615]
AMOT	-0.952	0.1485	-6.414	0.000***	[-1.245; -0.660]

Dependent variable: academic grade, * Significant at p-value < 0.05, ** Significant at p-value < 0.01, *** Significant at p-value < 0.001, IMKN: intrinsic motivation to know, IMAC: intrinsic motivation to accomplish, IMST: intrinsic motivation to stimulate, EMIDR: extrinsic motivation by identified regulation, EMINR: extrinsic motivation by introjected regulation, EMEXR: extrinsic motivation by external regulation, AMOT: Amotivation.

Table 5: quantile linear regression model to analyze the influence of the seven motivational subscales on clinical grades

Parameter	Coefficient	Standard error	t-statistic	p-value	95% Confidence Interval
Quantile q = 0.25					
Constante	10.118	0.7064	14.324	0.000	[8.726; 11.509]
IMKN	0.135	0.1604	0.839	0.402	[-0.181; 0.450]
IMAC	0.576	0.1702	3.383	0.001**	[0.241; 0.911]
IMST	0.393	0.1599	2.460	0.015*	[0.078; 0.708]
EMIDR	-0.294	0.0936	-3.142	0.002**	[-0.479; -0.110]
EMINR	-0.286	0.1543	-1.855	0.065	[-0.590; 0.018]
EMEXR	0.690	0.1781	3.872	0.000***	[0.339; 1.040]
AMOT	-0.133	0.1079	-1.231	0.219	[-0.346; 0.080]
Quantile q = 0.50					
Constant	10.458	0.7066	14.799	0.000	[9.066; 11.850]
IMKN	0.085	0.1604	0.531	0.596	[-0.231; 0.401]
IMAC	0.732	0.1702	4.300	0.000***	[0.397; 1.067]
IMST	0.609	0.1599	3.810	0.000***	[0.294; 0.924]
EMIDR	-0.309	0.0937	-3.296	0.001**	[-0.493; -0.124]
EMINR	-0.449	0.1544	-2.907	0.004**	[-0.753; -0.145]
EMEXR	0.674	0.1781	3.782	0.000***	[0.323; 1.025]
AMOT	-0.180	0.1080	-1.668	0.097	[-0.393; 0.033]
Quantile q = 0.75					
Constant	11.089	1.0661	10.401	0.000	[8.989; 13.189]
IMKN	0.253	0.2420	1.046	0.296	[-0.224; 0.730]
IMAC	0.644	0.2568	2.505	0.013*	[0.138; 1.149]
IMST	0.661	0.2413	2.741	0.007**	[0.186; 1.137]
EMIDR	-0.307	0.1413	-2.175	0.031*	[-0.586; -0.029]
EMINR	-0.509	0.2329	-2.186	0.030*	[-0.968; -0.050]
EMEXR	0.630	0.2688	2.343	0.020*	[0.100; 1.159]
AMOT	-0.104	0.1629	-0.639	0.523	[-0.425; 0.217]

Dependent variable: clinical grade, * Significant at p-value < 0.05, ** Significant at p-value < 0.01, *** Significant at p-value < 0.001, IMKN: intrinsic motivation to know, IMAC: intrinsic motivation to accomplish, IMST: intrinsic motivation to stimulate, EMIDR: extrinsic motivation by identified regulation, EMINR: extrinsic motivation by introjected regulation, EMEXR: extrinsic motivation by external regulation, AMOT: Amotivation.