Nursing students' perceptions of educational environnement: A Moroccan multicentre study

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Abstract

This study aimed to evaluate nursing, midwives and other healthcare students' perceptions of their educational environment in Morocco using Dundee Ready Education Environment Measure (DREEM). This multicentre cross-sectional study was conducted during the academic year 2018/2019. At the public nurse education institutes in Morocco. The sample included 2111 nursing, midwives and other healthcare students. A set of socio-demographic criteria were collected, and the version of Dundee Ready Educational Environment Measure questionnaire was used to evaluate the educational environment in academic institutions. The overall mean DREEM score was found to be more positive than negative. The five subscales' scores showed that students had a more positive perception of teaching and believed that their teachers were taking steps on their right way to become role models. regarding the academic side, students revealed their feelings of being more on the positive side but there are many problems in the atmosphere that require changes. They also denoted that the faculty was not too bad place. The nationality of the students, their residency with or away from their parents, their degree and option of study were all factors influencing DREEM ratings. Our survey covered 95 % of institutes, and included one of the largest samples of the undergraduate student. Students had more positive than negative impressions of their educational environment. Students in their first-year, in options other than nursing, as well as students living away from parents' residence, particularly international students were more likely to be satisfied with their educational environment.

Keywords: educational environment, DREEM scores, students, perception.

Highlights:

• The first and a global view of educational environment of undergraduate nursing midwives and health techniques students in Morocco.

• The study provides the first description of undergraduate nursing midwives and health techniques students in Morocco.

• This study highlights the factors affecting the educational environment of students in nursing, midwifery and health techniques in Morocco

Introduction

Educational environment is defined as the environment perceived by the students as well as by the teachers. These points of view are based on three important components: the physical environment, and intellectual and emotional climate (Mohamad Helal et al., 2013). The learning environment was described by Bloom as "the conditions, forces, and external stimuli which challenge the individual (Spencer, 1967). These forces can be physical, social, and intellectual. but also include the social interactions and most remote cultural and institutional forces. Therefore, the learning environment is a set of forces and activities in an interactive network that influence students' learning (Biggs, 1987; Dunn & Burnett, 1995).

The educational environment not only includes the student–teacher interactions, but also the learning environment, which includes good physical structures and facilities provided by institutes or universities. Students' psychosocial and emotional needs also require particular attention (Pimparyon et al., 2000).

In nursing education, the main objective is to produce nursing graduates with competence who can provide quality care to the population. An educational environment with a favorable design can contribute to a positive result for students; and affected positively student motivation, achievement, success and satisfaction (Chan et al., 2018; Genn, 2001). Students' experiences of the climate of their medical education environment are related to their achievements, satisfaction and success (Genn, 2001). The Dundee Ready Educational Environment Measure (DREEM) questionnaire is designed to assess perceptions by undergraduate nursing profession students of the educational environement. This includes all aspects involving teaching and learning in the health profession schools and both academic and clinical practice aspects.

Numerous studies concerning the assessment of educational environment have been conducted in various countries (Al-Hazimi et al., 2004). In Morocco, the only study concerning the perception of the educational environment by medical student was published by Belayachi et al. in 2015. However, to our knowledge, no data concerning nursing profession student perceptions in Morocco has been published.

This study aimed to evaluate nursing, midewife and health techniques students perceptions of the education environement in Morocco using the DREEM questionnaire, and to compare self-perception scores according to students characteristics.This evaluation of educational environment was used to identify problem areas to be considered and in the future for improvement and to apply a plan to improve educational environment.

Methods

Study design, settings and sample

A multicentre, cross-sectional study was conducted among undergraduate nursing Midwives and others healthcare students among the 23 institutes targeted, 22 enrolled in the present study who are public nursing education intitutions in Morocco . The national degree of nursing professions education includes programs for nurses, midwives and other healthcare professionals, and is organized into three cycles of study (licence, Master's, and PhD Cycles).

A total of 2,111 participants were enrolled, comprised of undergraduate Nursing, midwives and healthcare students nursing. Convenience sampling was used to choose participants from each site. Inclusion criteria were (1) students enrolled in all levels (1st, 2nd, or 3rd year) (2) students who gave informed consent. Exlusion criteria were: (1) students enrolled in private institutions of nursing education (2) refusing to give consent.

Instrument

The DREEM questionnaire (McAleer & Roff, 2002) has been developed in different languages, and several studies have showcased its validity and reliability in all educational contexts (Jakobsson et al., 2011; Kim et al., 2016; Rotthoff et al., 2011; Yusoff, 2012) . It evaluates the educational environment in educational institutions and consists of 50 items. Each item scored on five-point Likert scale from 0 to 4 with scores of 0 = strongly disagree, 1 = disagree, 2 = unsure, 3 = agree, and 4 = strongly agree. Nine items were scored in reverse.

For each item, a mean score ≤ 2.0 indicated problematic areas, a mean score of 2.0–3.0 indicates that the area could be enhanced or improved, and a mean score ≥ 3.5 was considered positive. The questionnaire is divided into five dimensions, and McAleer & Roff (2002) have also proposed a guide to interpreting the subscales displayed in table 1.

Data collection

This study was conducted between september 2018 and july 2019. The researcher provided participants with an explanatory statement outlining the study and explaining that all data collected is anonymous. The DREEM and demographic questionnaires were distributed. Students completed the survey by marking their answers on the survey instrument. A set of socio-demographic criteria were also collected: age, gender, field of study, level of study, parental residence, and nationality.

The present study was carried out in strict compliance with the provisions relating to ethical requirements. Favorable permission was obtained to conduct this study from the Rabat Ethics Committee for Biomedical Research (under no. 13/18, January 25, 2018). The authorization to have access to institutes was granted by the Ministry of Health, and informed free consent was obtained from every student who took part in this study. The ethical principles of volunteering, confidentiality, and anonymity were guaranteed to all the participants. Lastly, participants were free to leave the study at any time and did not receive any financial or nonfinancial incentives.

Data analysis

Continuous variables with symmetric distributions were expressed in mean ± standard deviation; those with asymmetric distribution were expressed in median and interquartile. The comparisons of the means of the total score of the DREEM questionnaire and the scores of the five dimensions according to the student characteristics were carried out by the Student's t-test or by the analysis of variance. Multivariate logistic regression analysis was performed. The Statistical Package for Social Sciences (SPSS) version 23 (IBM CORP, armork, USA) was used to analyze the data.

Results

Description of student characteristics:

A total of 2,275 students were invited to participate. A total of 2,252 responses were retrieved; with 2,111 students completing the questionnaire. Thus, the present study included 2,111 undergraduate nursing, midwives and health techniques students.

Students' mean age was 19.8 ± 2.0 years, and ranged from 17 to 47 years. Descriptive characteristics of undergraduate nursing professions and health techniques students are reported in table 3.

Description of overall DREEM score and subscale

The Cronbach's alpha of total DREEM scores was 0.85, showing good consistency.

Table 2 presents the mean of itims, subscale and overall of DREEM for the participants. The overall mean (± SD) DREEM score was 110.6 ± 21.5.

The mean score (± SD) of the dimension "Students' perception of learning/teaching" was 26.8 ± 6.4. indicating a more positive perception of . The lowest mean score was 1.39 for the item "The teaching time is put to good use". The highest mean score was 2.87 for the item "The teaching helps to develop my competence."

For the dimension "Students' perceptions of teachers", the mean score (± SD) was 24.2 ± 6.1 implying that teachers are taking steps to the right direction to become role models. The lowest mean score was 1.37 for the item "The

students irritate the teachers". The highest mean scores is 2.53 for two items "The teachers are knowledgeable" and "The teachers are well-prepared for their classes", respectively.

In regards to the dimension "Students' academic self-perceptions", the mean score($\pm$ SD) was 20.5 ± 5, revealing a feeling more on the positive side among students. The lowest mean score was 1.96 for the item "I am confident about passing this year." The highest mean score was 2.94 for the item "I have learnt a lot about empathy in my profession".

Concerning the "Student's perception of atmosphere" dimension, the mean score ($\pm$ SD) of 24.7 ± 6.3 showed that there are many issues that need changing according to the participants. The lowest mean score was 1.31 for the item "The course is well timetabled". The highest mean score was 2.72 for the item "There are opportunities for me to develop my interpersonal skills".

The last dimension "Students' social self-perceptions" had a mean score ($\pm$ SD) of 14.4 ± 3.9 denoting that faculty wasn't too bad place as reported by students. The lowest mean score was 0.89 for the item "There is a good support system for students who get stressed". The highest mean score was 3.13 for the item "I have good friends in this faculty".

The mean score percentages per subscale and total score among undergraduate students from all insitutes is show in table 4.

Association between total score DREEM and subscales and students' characteristics

The findings as presented in table 3 indicated that the overall DREEM score was unrelated to gender, despite the fact that female students scored somewhat higher than male students (111 vs 109, p = 0.19).

There was a significant association between total DREEM score and the nationality students (p < 0.001), indicating that international students had a better perception of their educational environment than Moroccan students. Students who lived with their parents gave lower score of their educational environment than those who did not (p < 0.001).

Health techniques students had better perception comparing to nursing students who also perceived their educational environment lower

than midwifery (p < 0.001) . while the first year students were the most satisfied with their educational environment (p < 0.001), followed by second-year, and third-year students have the lowest perception.

The association between mean scores of the five subscales of DREEM and students' characteristics was explored. The results indicated that students' nationality and field of study were correlated with the five subscales. Indeed, the highest scores were observed among international students and students in the field of health techniques. However the dimension "students academic self perception" is the only one that was unrelated to the level of study. Likewise, the dimension "students' social self perception" was also the one which was unaffected by where the students lived

Factors associated with the highest DREEM scale and subscales

Table 5 presented the factors associated with highest DREEM scale and subscales.

The factors related with significant higher DREEM were the international students [β=18.594 (12.536; 24.65) <0.001]; the students living away parental residence [β=3.792 (1.940; 5.644) <0.001], the first year level [β= 5.227(2.744 ; 7.711) <0.001], and the Health techniques fields [β =5.998(3.051; 8.945) <0.001]

The higher score of Students' perception of learning/teaching significantly associated with the international students [β=5.32 (3.502;7.139) <0.001], students living away parental residence [β =0.898(0.342 ;1.454) 0.002], students of first year level of study [β =2.072(1.327;2.818) <0.001] and the midwife students [β = 1.676 (0.966 ;2.387) <0.001].

The highest score of the subscale "Students' perceptions of Teaching" was significantly linked with international students [β=3.056(1.335;4.776)0.001], student resident away from parents [β = 1.150 (0.624; 1.676) <0.001) 0.002], student of first year level [β =2.599 (1.894;3.305)<0.001] and student of Health Technique field [β = 1.557 (0.72 ;2.394)<0.001].

The factors associated with significant higher score of Students' academic self-perceptions was international students [β = 4.526

(3.089;5.963) <0.001], students living away parental residence [β = 0.623 (0.184;1.062) 0.005].

The factors associated with significant higher score of Student's perception of atmosphere was international students [β=4.891(3.086;6.695) <0.001], students living away parents residence [B=1,094(0.542;1.645) <0.001], and the students of health technique and midwife [β =2.144 (1.266;3.022) <0.001] , [β =2.216 (1.511;2.921) <0.001] respectively .

The only factor which was associated with the significant higher Score of the dimension " Students Social Self-Perceptions" was the students of health technique [β= 0.898 (0.350; 1.447) <0.001].

Discussion

Our survey covered 95% of higher institutes of nursing professions and health techniques. According to data from the literature review carried out by Miles et al.(2012) and the systematic review carried out by Chan et al. (2018), this study, including 2,111 particpants, is one of the largest and the first study carried out in nursing underguraduate students in Morocco. Therefore, this work provided a realistic view of how Moroccan nursing, midwifery, and health techniques students evaluate their educational environment using DREEM.

According to the finding, Students' perceptions of their educational environment were more positive rather than negative. The overall mean DREEM score was found to be 110.6. As stated in the practical guide McAleer & Roff. (2002), this indicated a positive rather than a negative learning environment, which is below the highest category of scores, this is consist with previous studies (Chan et al., 2018). Thus, Chan et al. (2018) found that 80.6% of studies observed a mean total DREEM score of more positive than negative. A previous monocentric study conducted among Moroccan medical students (Belayachi et al., 2015) reported lower DREEM scores. Studies in other parts of the world showed different students perceptions (Chan et al., 2018). Our results corroborated those of the study carried out in Egypt among Pediatric and maternity nursing departments at Faculty of Nursing (Abusaad, FEL. Mohamed,

HES. El-Gilany, 2015); were higher compared to a study at six undergraduate medical institutions across Pakistan (Imran et al., 2015) and in Nursing and Midwifery School of Tehran University of Medical Sciences (Imanipour et al., 2015) ; and lower compared to others studies, notably, at the Aga Khan University Schools of Medicine and Nursing (Farooq et al., 2018), at Tajik nursing students at the two nursing colleges (Schubiger et al., 2019), and at KLE University, Belgaum, Karnataka, India (Sunkad et al., 2015).

The variety of these results can be explained by the difference in educational environments but also by the different characteristics of the students. First-year students had a significantly higher perception of educational environment when compared to their second- and third-year counterparts. This result was in accordance with studies that reported a trend for reduced scores in seniors (Kim et al., 2016; Mohd Said et al., 2009; Ousey et al., 2014). There was a decline in the students' perception of all domains from the first to third study years. Students were initially enthusiastic and had high hopes and optimism about their schools, but were less optimistic in later years due to curriculum particularities and also with an increasing workload among students in siniors. This finding was consist with another study conducted of nursing faculty (Irfan et al., 2019; Mohd Said et al., 2009).

Although, the paucity of studies comparing the educational environment between disciplines (Chan et al., 2018). The comparison of the DREEM scores of three groups (nursing, midwife and techniques health students) revealed that the field of studies was a predictor factor. There was a significant difference in the students' perception of the educational environment depending on their field of study, Nursing and midwife students showed lower DREEM scores than those of techniques health students. Ousey et al. (2014) revealed that nursing students perceved their educational environment higher than the other disciplines midwifery, podiatry, and operation department practice in health professional courses at the university of Huddersfield, United Kingdom. Similar findings from Iran, at Islamic Azad university, reported that DREEM scores of medical, nursing and midwifery students were significantly different (Farajpour et al., 2017). In

addition, Bakhshialiabad et al. (2015) found that operation room nursing, anesthesia and laboratory sciences students had significantly higher overall DREEM mean scores compared to nursing, midwifery, and radiology. This trendency maybe explained by the new curriculum used in the study fields (Mohd Said et al., 2009), and easy access to opportunities. All in all, the students of the new study fields and who experienced new field appear globally more satisfied with their curriculum. the perception of the educational environment could be improved with changes in the program of studies

As an outcome, both international students and students living away parental residence perceived their educational environment as better than those residing with their families. This is in line with the results of a study in a private university, Karachi Pakistan, where students living in hostel resident perceived their educational environment more satisfying (Farooq et al., 2018). Thus, this resultat differ of a study in irland where irish student had better score than non irish students (Avalos et al., 2007). However this result may be explained by the fact that the international students and students living far from their families are experiencing a break from their previous lifestyle. Adaptation to their new environment is a psychological necessity, and was associated with a better perceived environment.

The strengths of this study were mainly that it was conducted in all public higher institutes. This is the first study assessing the educational environment of nursing and health techniques students in Morocco using DREEM inventory. The data collected in this study may be used as a basis for reinforcing the strengths, and trying to overcome the weaknesses of the education environment. This study is one of the largest carried out in Morocco. The generalization of results could be done after recreut in all field at the Moroccan higher institutes and also the convenience sampling was a limit to this geniralization.

Conclusion

These results had shown and identified areas requiring improvement and revision. The students assessed the educational environment at higher institutes as more positive than

negative. First-year students in fields other than nursing, living away from their parents' residence, and particularly international students, perceived the educational environment as better. The educational environment is the sine qua non predictor to understanding students' attitude toward science and their motivational beliefs. For this reason, an educational environment must be developed according to students' needs. Considering what students need from their educational environment and decreasing the gap between the actual and expected environments is necessary. Thus, continued studies are required to verify and maximize the results of this study, and to broaden the area of investigation to the professions nursing and health technique. For these future studies, it is recommended that they touch and examine every aspect of the educational environment.

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Table 1: A guide to interpreting acourding to McAleer & Roff. (2002)

	Total DREEM score	**SPoL : Self Perceptions of learning;**	**SPoT : Self Perceptions of teaching;**	**SASP: Self Academic self-perceptions;**	**SPoA : Self Perceptions of atmosphere;**	**SSSP : Self Social self-perceptions**
1	Very poor environment less than 50	very poor 0–12	Abysmal 0–11	Feelings of total failure 0–8	A terrible environment 0–12	Miserable 0–7
2	Plenty of problems in the environment 51–100	Teaching is viewed negatively 13–24	In need of some retraining 12–22	many negative aspects 9–16	There are many issues that need changing 13–24	Not anice place 8–14
3	More positive than negative environment 101 to 150	A more positive perception 25–36	Moving in the right direction 23–33	Feeling more on the positive side 17–24	A more positive attitude 25–36	Not too bad, 15–21
4	Excellent environment more than 151	Teaching highly thought of	Model teachers 34–44	confident 24–32	A good feeling overall	Very good socially 22–28

| | 37–48 | | 37–48 | |

Table 2 : Mean total scores on the Dundee Ready Educational Environment Measure and its five subdomains: perceptions of learning, perceptions of teaching, academic self-perceptions, perceptions of atmosphere and social self-perceptions from students nurses during the 2018/2019 academic years in institute

	Subdomain Mean(SD)	Items	Mean	SD
Total DREEM score	Perceptions of learning (12 items)	1. I am encouraged to participate in class.	2,55	1,21
		7. The teaching is often stimulating.	2,25	1,35
		13. The teaching is student-centered.	1,90	1,32
	26,8 (6,4)	16. The teaching helps to develop my competence.	2,87	1,19
110,6 (21,5)		20. The teaching is well focused.	2,41	1,16
		22. The teaching helps to develop my confidence.	2,34	1,36
		24. The teaching time is put to good use.	1,39	1,39
		25. The teaching overemphasizes factual learning.	2,34	1,24
		38. I am clear about the learning objectives of the course.	2,42	1,20
		44. The teaching encourages me to be an active learner.	2,28	1,27
		47. Long-term learning is emphasized over short-term learning.	2,39	1,25
		48. The teaching is too teacher-centered.	1,66	1,16
	Perceptions of teaching (11 items)	2. The teachers are knowledgeable.	2,53	1,14
		6. The teachers are patient with students.	2,24	1,26
	24,20 (6,1)	8. The teachers ridicule the students.	2,2	1,25
		9. The teachers are authoritarian.	1,74	1,28
		18. The teachers have good communication skills with students.	2,34	1,23
		29. The teachers are good at providing feedback to students.	2,34	1,25
		32. The teachers provide constructive criticism.	2,43	1,23
		37. The teachers give clear examples.	2,64	1,15
		39. The teachers get angry in class.	1,84	1,35
		40. The teachers are well prepared for their classes.	2,53	1,19
		50. The students irritate the teachers.	1,37	1,30
	Academic self-	5. Learning strategies which worked for me before continue to work for me now.	1,97	1,25
		10. I am confident about passing this year.	2,96	1,97

perceptions (8 items)	21. I feel I am being well prepared for my profession.	2,66	1,20
	26. Last year's work has been a good preparation for this year's work.	2,45	1,32
20,5 (5.)	27. I am able to memorize all I need.	2,76	1,25
	31. I have learned a lot about empathy in my profession.	2,94	1,03
	41. My problem solving skills are being well developed.	2,21	1,31
	45. Much of what I have to learn seems relevant to a career in healthcare.	2,56	1,11
Perceptions of atmosphere (12 items)	11. The environment is relaxed during ward teaching.	1,99	1,19
	12. This school is well scheduled.	1,31	1,40
	17. Cheating is a problem in this school.	1,57	1,38
24,7 (6,3)	23. The atmosphere is relaxed during lectures.	2,04	1,19
	30. There are opportunities for me to develop interpersonal skills.	2,72	1,18
	33. I feel comfortable in class socially.	2,27	1,25
	34. The atmosphere is relaxed during seminars/tutorials.	2,12	1,15
	35. I find the experience disappointing.	2,25	1,41
	36. I am able to concentrate well.	2,36	1,19
	42. The enjoyment outweighs the stress of the course.	2,00	1,21
	43. The atmosphere motivates me as a learner.	1,65	1,28
	49. I feel able to ask the questions I want.	2,39	1,39
Social self-perceptions (7 items)	3. There is a good support system for students who get stressed.	0,89	1,16
	4. I am too tired to enjoy the course.	1,84	1,36
14,4(3,9)	14. I am rarely bored on this course.	2,08	1,30
	15. I have good friends in this Institute .	3,13	1,26
	19. My social life is good.	2,63	1,32
	28. I seldom feel lonely.	2,03	1,48
	46. accommodations are pleasant.	1,88	1,35

Table 3: Descriptive statistics on the students' characteristics and their association with DREEM scale and sub-scales scores

	n (%)	SPoL	SPoT	SASP	SPoA	SSSP	Total score
Gender							
Male	455 (21.6)	26.4±6.6	23.7±6.2	20.2±5.0	24.8±6.5	14.3±3.9	109.5±22.2

Female	1656 (78.4)	26.9±6.3	24.3±6.0	20.6±5.0	24.6±6.3	14.5±3.8	111.0±21.2
P value		0.16	**0.04**	0.15	0.58	0.39	0.19
Nationality							
international students	45 (2.1)	32.5±5.5	27.8±5.1	25.1±3.8	30.7±6.2	15.6±4.1	131.8±17.9
Marocain students	2066 (97.9)	26.7±6.4	24.1±6.1	20.4±4.9	24.5±6.3	14.4±3.8	110.2±21.3
P value		**< 0 .001**	**< 0 .001**	**< 0 .001**	**< 0 .001**	**0.048**	**< 0 .001**
Parent's residence							
living away parents residence	894 (42.3)	27.6±6.2	25.1±5.8	21.0±4.9	25.6±6.2	14.6±3.9	113.9±21.0
living in parents residence	1217 (57.7)	26.2±6.4	23.5±6.2	20.1±5.0	24.0±6.3	14.4±3.9	108.2±21.5
P value		**< 0 .001**	**< 0 .001**	**< 0 .001**	**< 0 .001**	0.24	**< 0 .001**
Study level							
1st year	1126 (53.3)	27.7±6.3	25.3±5.9	20.7±5.0	25.1±6.3	14.7±3.8	113.5±21.3
2 nd year	626 (29.7)	26.0±6.4	23.3±6,2	20.2±4.9	23.9±6.3	14.2±4.1	107,6±21.6
3rd year	359 (17.0)	25.3±6.3	22.3±5.7	20.4±5.1	24.7±6.4	14.1±3.7	107.0±20.5
P value		**< 0 .001**	**< 0 .001**	0.100	**0.001**	**0.009**	**< 0 .001**
Study field							
Nursing	1460 (69.16)	26.1±6.3	23.5±6.0	20.3±5.0	23.9±6.2	14.2±3.8	108.1±21.1
Midwife	411 (19.47)	28.1±6.3	25.5±6.01	21.0±4.7	26.0±5.9	14.9±3.9	115.4±20.2
Health Techniques	240 (11.37)	28.5±6.7	26.1±5.8	21.0±5.3	26.9±6.7	15.3±3.7	117.8±22.2
P value		**< 0 .001**	**< 0 .001**	**0.014**	**< 0 .001**	**< 0 .001**	**< 0 .001**

Table 4: Pourcentages of categories of DREEM subscales and total score

		Interpretation			
		1	**2**	**3**	**4**
Dreem total score		Very Poor; **0.4%**	Plenty of Problems **30.6%**	More than Positive Negative **66.5%**	Excellent **2.5%**

SPoL : Self Perceptions of learning;	Very Poor **1.5%**	Teaching is viewed negatively **34.4%**	A more positive perception **58.2%**	indicated: Teaching highly thought of.**5.9%**
SPoT : Self Perceptions of teaching;	Abysmal **2.7%**	In need of some retraining; **34.2%**	Moving in the right direction **57.6%**	Model teacher **5.5%**
SASP: Self Academic self-perceptions;	Feelings of total failure; **1.6%**	Many negative aspects **18.7%**	Feeling more on the positive side **57.8%**	Confident **21.9%**
SPoA : Self Perceptions of atmosphere;	A terrible environment **3.2%**	There are many issues which need changing **44.7%**	A more positive attitude **49.7%**	A good feeling overall **2.4%**
SSSP : Self Social self-perception	Miserable; **3.7%**	Not a nice **45.8%**	Not too bad; **47.5%**	Very good socially **3%**

Table 5 : Factors affecting the highest scores of DREEM scale and subscales using multivariate analysis

	Perception of learning	Perception of teaching	Academic self perception	Perception of atmosphere	Social self perception	DREEM total score
	B(95% IC) P	B(95% IC) P	B(95% IC) P	B(95% IC) P	B(95% IC) P	B(95% IC) P
Gender						
Female	0.27 (-0.39 ;0.95) 0.41	0.36 (-0.27 ;1) 0.26	0.51 (-0.02 ;1.04) 0.06	-0.36 (-1.03 ;0.31) 0.28	0.08(-0.33 ;0.51) 0.696	0.87(-1.36 ; 3.11) 0.44
Male	0a	0a	0a	0a	0a	0a
Natioanlity						
International students	5.32 (3.52;7.13) <0.001	3.05 (1.33;4.77) 0.001	4.52 (3.08 ;5.96) <0.001	4.89 (3.08 ;6.69) <0.001	0.81 (-0.32 ;1.93) 0.16	18.5 (12.56 ;24.65) <0.001
Moroccan students	0a	0a	0a	0a	0a	0a
Residence						
Awayfrom parents	0.89 (0.34 ;1.45)	1.15(0.62 ;1.67)	0.62(0.18 ;1.06)	1,09(0.54;1.64)	0.02(-0.31 ;0.37)	3.79(1.94 ;5.64)

	0.002	<0.001	0.005	<0.001	0.87	<0.001

With parent	0a	0a	0a	0a	0a	0a
Studylevel						
1st year	2.07(1.32 ; 2.81) <0.001	2.59(1.89 ;3.30) <0.001	0.13(-0.45 ;0.71) 0.66	-0.01(-0.74 ; 0.73) 0.98	0.43(-0.03 ;0.89) 0.06	5.22(2.74;7.71)<0.001
2ndyear	0.59(-0.21 ;1.41) 0.152	0.91(0.14 ; 1.67) 0.02	-0.31(-0.94 ;0.33) 0.35	-0.86(-1.67 ; -0.06) 0.03	0.02(-0.48 ;0.52) 0.93	0.35 (-2.35;3.05) 0.79
3rd year	0a	0a	0a	0a	0a	0a
Study field						
Health Technique	1.29 (0.40;2.17) 0.47	1.55 (0.72 ;2.39) <0.001	0.11(-0.59 ;0.81) 0.33	2.14(1.26 ;3.02) <0.001	0.89(0.35 ; 1.44) 0.001	5.99 (3.05 ; 8.94) <0.001
Midwife	1.67(0.96 ;2.38) <0.001	1.56(0.89 ; 2.23) <0.001	0.51 (-0.05 ;1.06) 0.07	2.21(1.51 ;2.92) <0.001	0.60(0.15 ;1.04) 0.008	6.56(4.19 ;8.92) <0.001
Nursing	0a	0a	0a	0a	0a	0a

'a' reference of comparing