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The Association Between Academic Performance, Self-Efficacy and Parenting Style Among Malaysian Undergraduate Dental Students

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ABSTRACT

Self-efficacy and parenting style have been associated with academic performance and therefore should be investigated to facilitate students' overall well-being. This study was undertaken to determine the association between self-efficacy, parenting style and academic performance among dental students at a Malaysian institution. A validated survey instrument containing the Parental Authority Questionnaire and the Self-Efficacy for Learning Form-Abridged was distributed online to all dental students (Year 1 to Year 5; n=356) at Universiti Teknologi MARA, Malaysia. Quantitative data were analysed via Chi-square test, independent t-test and analysis of variance (significance value $p < 0.05$) using SPSS. The response rate was 87.7% (n=356). Most parents (53.6% of fathers, 62.9% of mothers) demonstrated an authoritative parenting style. The mean self-efficacy score of all students was 3.35 out of 5 (SD 0.51). Most students demonstrated average academic performance (65.7%). Students' academic performance and self-efficacy were significantly associated with academic year, but not with household income. There was a significant correlation between 1) students' academic performance and fathers' parenting style, 2) students' self-efficacy and parenting style of both parents and 3) students' self-efficacy and their academic performance. Parenting style and self-efficacy are significant factors that determine students' academic performance.

Keywords: *academic self-efficacy, dental education, parenting style*

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INTRODUCTION

Academic performance is a measure of students' achievements based on scores and grades across various academic subjects. It is also determined by the extent to which the short- and long-term goals of a student and their education providers are met during the learning process (1). In dentistry, academic performance is the main predictor assessed during the selection and qualifying processes (2). Excellence in examinations is considered one of the most important selection criteria imposed by dental schools around the world (2, 3). Once enrolled, students undergo various formative and summative assessments designed to evaluate their cognitive, psychomotor and affective skills in the different areas of dental practice (4, 5). Academic performance is therefore one of the most crucial elements in determining students' success in completing their dental studies and their eventual ability to practise as competent dentists (2, 3).

One of the factors that has been associated with academic performance among dental students is self-efficacy (6), which is related to one's abilities to organise and implement actions required for accomplishment in certain areas (7). It has previously been reported that students who exhibited self-efficacy demonstrated greater interest in teaching and learning and developed effective strategies to achieve their established goals (8). Students who demonstrated self-efficacy were also found to exhibit better coping skills and resilience during higher education studies, with many acquiring satisfactory overall health and psychosocial well-being (9–11).

Another factor that determines students' academic performance is the parenting style they experience as they grow up (12). Parenting styles refer to the characteristics and attributes exhibited by parents, whose actions, attitudes and behaviours may influence a child's upbringing, development and maturation (13). According to Baumrind (1967), there are three parenting styles – authoritarian, permissive and authoritative; however, within each parenting style, parents' characteristics may differ according to individual factors and environmental circumstances (14). In addition to their effect on academic performance, parenting styles were reported to be significantly associated with children's psychological and behavioural well-being, including level of self-efficacy (15, 16).

Therefore, to enhance dental students' academic performance, the development of self-efficacy and having experienced a good parenting style are vital aspects that need to be considered and addressed. This is important to ensure that students are prepared to face the challenges of studying dentistry, where cases of underperformance are observed despite a student having presented with an excellent academic profile upon entry (17, 18). Measures can be designed and executed by education providers and other relevant parties to provide support for students' academic achievements and professional development.

However, there are currently a limited number of studies that explore the associations between academic performance, self-efficacy and parenting style among dental students, particularly in Asia, where sociocultural factors may have an influence (19).

Moreover, at the local level, the status of academic self-efficacy among Malaysian dental students and their parents' parenting styles are unknown. This study aims to explore the self-efficacy and perceived parenting styles of dental students at Universiti Teknologi MARA (UiTM), Malaysia. This study will further explore the relationship between academic performance and self-efficacy and parenting style within the study cohort.

METHODS

Study design

This was a descriptive, quantitative, cross-sectional study using an online self-administered validated questionnaire sent to undergraduate dental students (Year 1 to Year 5) at the Faculty of Dentistry, UiTM, Malaysia. The questionnaire contained the Parental Authority Questionnaire (PAQ) published by Buri in 1991 (20) and the Self-Efficacy for Learning Form–Abridged (SELF-A) published by Zimmerman and Kitsantas in 2007 (21). Quantitative data were analysed via Chi-square test, independent t-test and analysis of variance (ANOVA; significance level $p < 0.05$) using SPSS software.

Study population

This survey involved all undergraduate dental students (Year 1 to Year 5, $n=408$) at the Faculty of Dentistry, UiTM, Malaysia.

Study instrument

This study involved the use of a questionnaire that contained the PAQ (20) and the SELF-A (21). These questionnaires were chosen because they have been widely used in previous studies involving university students and have been tested for reliability (21, 22).

The self-administered questionnaire was divided into three sections: Section A – Sociodemographic characteristics, Section B – PAQ and Section C – SELF-A.

The study instrument was content validated by a panel of experts in related areas. It was then face validated by a group of medical students ($n=10$) at the same institution. Modifications to the questionnaire were made prior to the main survey.

Conducting of survey

The questionnaire was distributed via email to all students using their official university email addresses obtained from the Faculty Administration Office. A link was provided to the students to connect them to the online survey page. A consent agreement statement and a 'plain language statement' outlining the objectives of the study, as well as issues regarding confidentiality, were published together virtually on the online survey platform.

A reminder email was sent after three weeks, with a final reminder sent three weeks later. Unanswered surveys or a non-reply were considered as refusal to participate. An online survey was deemed to be the most appropriate method for this study, as it was considered a financially feasible and practical way to reach all respondents.

Data entry and analysis

Quantitative data were entered into the SPSS statistical program (Version 26) for analysis. Further analyses via Chi square test, independent t-test and one-way ANOVA (significance value $p \leq 0.05$) were conducted to assess correlations between the different variables and the statistical significance of differences between groups.

For analysis of academic performance, students were asked to indicate their results (grades) from their latest examination (either semester test or professional examination) in Section A, Question 4. These grades were ultimately categorised into the different levels of academic performance: high performance (grades A+, A, A-), average performance (grades B+, B, B-, C+, C and C-) and low performance (grades D+, D, E and F).

For analysis of parenting style, students were asked to answer the PAQ in Section B, which contained 30 items related to parenting style for both the mother and father figures. This questionnaire is divided into three subscales: permissive, authoritarian and authoritative. Our study subjects were asked to rate their responses on a 5-point Likert scale (1=Strongly agree, 5=Strongly disagree). Scores on each subscale ranged from 10 to 50. The scores of individual items were summed, and the subscale with the highest score was considered the parenting style perceived by the child. If the total scores were similar, the mother or father figure was considered to have a 'mixed' parenting style.

For analysis of academic self-efficacy, students were to answer the Self-A components in Section C, which contained 19 items related to self-efficacy. Students were asked to rate their responses on a 5-point Likert scale (1=Definitely cannot do it; 2=Probably cannot do it; 3=May be able to do it; 4=Probably can do it; 5=Definitely can do it). The scores were converted into numeric points, and the average for each participant was calculated to generate the mean self-efficacy score.

Ethical approval

Ethical approval for the conducting of this study was obtained from the Human Research Ethics Committee, UiTM, Malaysia [REC/03/2021(UG/MR/223)].

RESULTS

Sociodemographic characteristics

A total of 356 students (out of 408 students) responded to the survey (overall response rate=87.7%), with the highest response rate observed for the Year 1 students (91%). Most of the respondents were female (82.6%) and a plurality had a household income of RM4850 to RM10959 (32%).

The majority of UiTM dental students noted that their main male figure was their biological father (91.9%), most of whom have completed tertiary education (72.2%). Likewise, most respondents listed their biological mother as their main female figure (97.2%), with most of them having received tertiary education (70.8%). Table 1 depicts the sociodemographic characteristics of the study respondents.

Table 1. Sociodemographic characteristics

Characteristics		Percentage of respondents (n)
Gender	Male	17.4% (62)
	Female	82.6% (294)
Academic Year	Year 1	91.0% response rate (71)
	Year 2	86.6% response rate (71)
	Year 3	86.4% response rate (70)
	Year 4	86.7% response rate (65)
	Year 5	87.8% response rate (79)
Household income	Less than RM2500	22.2% (79)
	RM2500 to RM4849	16.9% (60)
	RM4850 to RM10959	32.0% (114)
	More than RM10960	28.9% (103)
Main male figure	Biological father	91.9% (327)
	Stepfather	1.1% (4)
	Foster father	0.6% (2)
	Uncle	0.3% (1)
	No main male figure	5.1% (18)
Education of main male figure	Other	1.1% (4)
	No formal education	1.1% (4)
	Primary	1.7% (6)
	Secondary	20.2% (72)
Main female figure	Tertiary	72.2% (257)
	Biological mother	97.2% (344)
	Stepmother	1.1% (4)
	Foster mother	0.3% (1)
Main female figure	Grandmother	0.6% (2)

	Aunt	0.3% (1)
	No main female figure	0.6% (2)
Education of main female figure	No formal education	0.6% (2)
	Primary	2.5% (9)
	Secondary	25.3% (90)
	Tertiary	70.8% (252)
	Not applicable	0.8% (3)

Parenting style

It was found that most students perceived their main male and female figures to have authoritative parenting styles (53.6% and 62.9%, respectively). Table 2 depicts the parenting styles perceived by UiTM dental students to be used by their main male and female figures.

Table 2. Parenting styles of UiTM dental students' main male and female figures

	Parenting style	Percentage (n)
Main male figure	Authoritative	53.6% (185)
	Authoritarian	20.3% (70)
	Permissive	17.4% (60)
	Mixed	8.7% (30)
Main female figures	Authoritative	62.9% (224)
	Authoritarian	16.9% (60)
	Permissive	10.1% (36)
	Mixed	10.1% (36)

Self-efficacy

The mean self-efficacy score of all students was 3.35 (SD 0.505) (Table 3).

There was a significant difference in self-efficacy scores across students of all academic years [Year 1=3.54 (SD 0.46); Year 2=3.24 (SD 0.48); Year 3=3.25 (SD 0.42); Year 4=3.38 (SD 0.45); Year 5=3.34 (SD 0.62); $p=0.002$]. A post hoc comparison using Tukey's honestly significant difference (HSD) found a significant difference in mean scores between Year 1 and Year 2 and between Year 1 and Year 3.

There was no significant association between self-efficacy and household income ($p=0.281$).

The self-efficacy mean score of female students (3.3771, SD 0.524) was significantly higher than that of their male counterparts (3.2190, SD 0.381; $p=0.010$).

Table 3. Students' self-efficacy scores

	Students' self-efficacy score	Comparisons of self-efficacy scores (significance value, $p < 0.05$)		
		By academic year	By household income	By gender
Year 1	3.54 (SD 0.46)	$p = 0.002$ Post hoc comparison using Tukey's HSD: $p < 0.05$ between Year 1 and Year 2; $p < 0.05$ between Year 1 and Year 3.	$p > 0.05$	$p < 0.05$
Year 2	3.24 (SD 0.48)			
Year 3	3.25 (SD 0.42)			
Year 4	3.38 (SD 0.45)			
Year 5	3.34 (SD 0.62)			
	Mean = 3.35 (SD 0.505)			

Academic performance

More than half the study population (65.7%) was in the 'average' category for academic performance, while 30.9% and 3.4% of the respondents were in the high and low performance categories, respectively.

Students' academic performance was significantly associated with academic year ($p < 0.05$). Compared to Year 3 and Year 5 students, a significantly higher percentage of Year 1, Year 2 and Year 4 students were categorised as having 'high' performance (Year 1=42.3%, Year 2=40.8%, Year 4=52.3%). Though relatively few Year 3 and Year 5 students demonstrated 'high' academic performance (Year 3=17.1%, Year 5=6.3%), a high percentage of them belonged to the 'average' category (Year 3=75.7%, Year 5=93.7%). None of the students from Year 5 were in the 'low' performance category (Table 4).

There was no significant association between academic performance and household income ($p = 0.060$) or gender ($p = 0.442$).

Table 4. Students' level of academic performance

	Low	Average	High	Comparisons of levels of academic performance (significance value, $p < 0.05$)		
				By academic year	By household income	By gender
	Percentage (%)					
Year 1	5.6	52.1	42.3			
Year 2	2.8	56.3	40.8			
Year 3	7.1	75.7	17.1			

Year 4	1.5	46.2	52.3	p<0.05	p=0.060	p=0.442
Year 5	0	93.7	6.3			

Correlations between academic performance, parenting style and self-efficacy

Correlation between academic performance and parenting style

There was a significant correlation between students' academic performance and their main male figures' parenting style ($p=0.029$). In contrast, there was no significant correlation between students' academic performance and their main female figures' parenting style ($p=0.287$) (Figure 1).

Correlation between self-efficacy and parenting style

There was a significant association between self-efficacy scores and the parenting style of students' main male figure ($p=0.03$). Post hoc comparison using Tukey's HSD revealed that a significant difference in self-efficacy scores was noted between those who perceived their male figures as having permissive and authoritative parenting styles ($p<0.05$) (Figure 1).

There was also a significant correlation between self-efficacy scores and the parenting style of students' main female figure ($p<0.05$). Post hoc comparison using Tukey's HSD revealed a significant difference in self-efficacy scores between those who perceived their female figures as having authoritative and mixed parenting styles ($p<0.05$) (Figure 1).

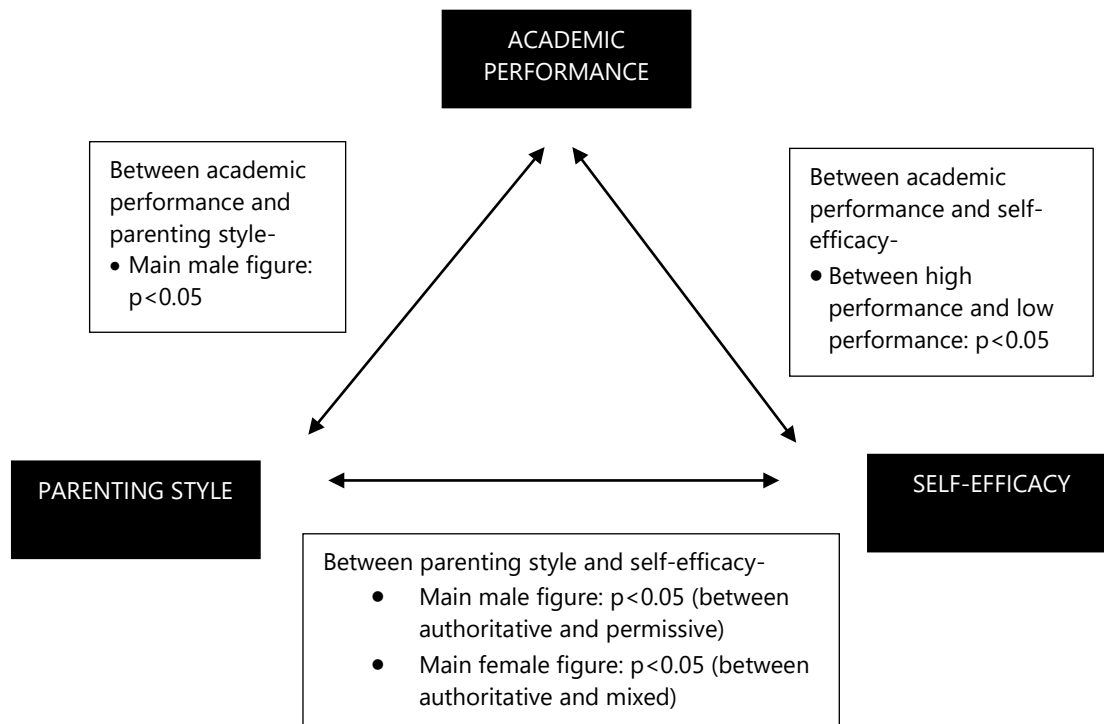


Figure 1. Correlation among self-efficacy, parenting style and academic performance

Correlation between self-efficacy and academic performance

There was a significant correlation between self-efficacy scores and academic performance ($p=0.001$). Post hoc comparison using Tukey's HSD revealed a significant difference between the high- and low-performing students ($p < 0.05$) (Figure 1).

DISCUSSION

This study was conducted among undergraduate dental students at UiTM, Malaysia. The Faculty of Dentistry was established in 2006, with the aim of producing professionals of Bumiputera ethnicity with high-quality education (23). Entrance into the undergraduate dentistry programme is highly competitive, with selection based on candidates' academic excellence and performance during an interview (24). This study found that most of the students were from middle-income families, with most of their parents having acquired qualifications at a tertiary or higher education level.

The study found that the self-efficacy level among the undergraduate dental students at this university was above average (mean score of 3.35 out of 5). Self-efficacy has been

found to be a significant factor in ensuring the survival of university students, regardless of the programme in which they are enrolled (25, 26). This is because higher education institutions exercise teaching and learning modalities that are aimed at producing graduates with skills in independent and life-long learning, as well as self-advocacy (27). Students are expected to function at a high level of self-sufficiency while performing with high competence in tasks and procedures involving teamwork and organisational input (27). The 'higher than average' level of self-efficacy demonstrated by respondents in this study indicates that students undertaking dentistry studies at this institution acquire qualities similar to those exhibited by students at other higher learning institutions across the world, including those in dental programmes (28, 29).

In dental education, students engage in activities that require them to exhibit self-reliance, including note-taking during lectures, completion of preclinical projects and management of patients' clinical cases (24). Self-efficacy is therefore a vital determinant of students' performance in dental school, as reported in previous studies involving dental students (6). Such findings are further supported by the results of the current study, which revealed a significant difference in self-efficacy between students with high and low academic performance. While respondents in this study generally demonstrated a 'higher than average' level of self-efficacy, further development of this quality should be undertaken to improve the academic achievements of those who are performing poorly. A peer-support system that integrates the high- and low-performing students may be a useful approach for guiding students in the latter category to acquire the necessary skills, including self-efficacy, to improve their performance in their studies and their overall well-being (30, 31). Other programmes designed to develop self-efficacy include self-coaching and living skills workshops, which involve problem-solving tasks that require both independent and group work (32). It has been found that such initiatives are effective in improving the intellectual development and social integration of students who face challenges in adapting to university life (32).

In addition to these initiatives, involvement in extracurricular activities at the primary and secondary education levels has also been associated with the development of positive characteristics, including self-efficacy (33). Perhaps involvement with, and achievements in, extracurricular activities at school should be compulsory for students applying to study dentistry. With many cases of failure, mental illness and dropping out among dental students (17, 34, 35), it is time that the criteria for admission into dentistry be re-examined so that the essential qualities are emphasised during the selection process. Participating in extracurricular activities at university should be further encouraged so that students' personal development will continue in tandem with their intellectual and professional growth.

This study also found a significant association between self-efficacy and the parenting styles of both parents, especially those who were perceived to be authoritative. The authoritative style, which is characterised by responsiveness, open communication, nurturing, affection and discipline through guidance, has been associated with positive outcomes in children's psychological and social well-being (36). It is evident from the results of this study that parents should apply a good parenting style, as it plays an important role in instilling desirable behaviours in their children, including self-efficacy.

Programmes on parenting skills can be introduced to foster positive parent–child relationships, especially for parents whose children are enrolled in demanding and stressful university programmes such as dentistry. Regular contact between the faculty and parents could serve as a useful platform for parents to be made aware of their children’s performance and how they as parents can support their children’s overall well-being.

The parenting style of one’s father was also found to be significantly associated with the academic performance of dental students in this study. This may be related to the Asian culture, in which the father is perceived to be the dominant figure and breadwinner of the family (37). As their parenting style was found to have a significant impact on their children’s well-being, it is crucial that fathers exercise the appropriate parenting skills. The positive association of the authoritative parenting style with children’s academic performance, as described in previous studies (38), suggests that it should be further explored whether this style should be recommended to promote desirable behaviour and intellectual development in dental students.

The significant association between academic performance and self-efficacy across the different academic years indicates a need for the provision of support tailored to individuals in each academic year. Students may experience different challenges as they progress through their studies (39). It is therefore incumbent on the faculty to identify the various stressors and difficulties to which students are subjected during the different stages of their training and provide the necessary support. A strategic approach in providing aid and guidance for students is vital as the faculty endeavours to support students’ diversity in learning and living.

Another interesting finding reported in this study is the absence of significant associations between household income and academic performance and self-efficacy. This finding suggests that academic performance and self-efficacy can be achieved regardless of one’s socioeconomic status. Nonetheless, it is important to provide proper nurturing and a healthy environment to a developing individual, as these factors may determine their behaviour and academic achievements.

This study was limited by its dependence on participants’ responses, which may be subject to response bias. Nevertheless, every effort has been taken to ensure respondents’ honesty in answering the questions, including exercising anonymity and voluntary participation. The findings of this study provide useful information for stakeholders, higher education providers and all relevant parties that will help them recognise important elements to be addressed in promoting the development of personal and professional well-being in dental students, both locally and worldwide.

CONCLUSION

This study found that most dental students at UiTM, Malaysia, demonstrated a slightly above average level of self-efficacy and average academic performance. The levels of self-efficacy and academic performance differ significantly among students across the academic years. A majority of the students perceived that both their parents exercised an authoritative parenting style. There was a significant relationship between parenting style, self-efficacy and academic performance among dental students of this study cohort.

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DATA AVAILABILITY STATEMENT

The data used in the current study are kept in a locked facility at the Faculty of Dentistry, Universiti Teknologi MARA, Malaysia. Access to the data is only by relevant investigators, unless required by law. The data will be available for up to five years after the date of publication.

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