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The Relationship Between Students' Perception of the Learning Environment and Graduates' Preparedness for Practice in Dentistry

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ABSTRACT

The learning environment is known to influence students' success. Furthermore, it will affect the graduate's future practice. More studies need to be made available on the correlation between dental students' perception of their learning environment and dental graduates' preparedness for practice. This study aims to identify this correlation, thus addressing this gap. Assessing this correlation will provide a basis for improving the learning environment and supporting graduates' preparedness for practice. This cross-sectional study was conducted at the Faculty of Dentistry, Syiah Kuala University, and involved 101 dental graduates from 2022 to 2023. Data were collected using the Dundee Ready Educational Environment Measure (DREEM) and a modified Graduate Assessment Preparedness of Practice (GAPP) instrument. Pearson's correlation test was used to determine the correlation between the two aspects and assess each domain's correlation strength using SPSS version 26. Data analysis showed that the average DREEM score of all respondents was 147.9/200, indicating a 'more positive than negative' learning environment. The average GAPP score was 201.2/238, showing that graduates have high preparedness for practice in almost all areas, including clinical skills, communication, professionalism, and management and leadership. A statistically significant, low, and positive correlation was found between the DREEM and GAPP scores ($r_s = 0.365$, $p < .001$). A significant relationship exists between students' perceptions of their learning environment and graduates' preparedness for practice. A positive learning environment increases students' motivation, engagement in learning and academic achievement, further impacting graduates' readiness for workplace practice.

Keywords: *Dental graduates, Learning environment, Preparedness for practice*

CORRESPONDING

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INTRODUCTION

According to the WHO Global Oral Health Status Report (2022), nearly 3.5 billion people worldwide are affected by oral diseases, with the majority, around 75%, residing in middle-income nations. An estimated 2 billion individuals experience permanent tooth decay, while 514 million children are affected by decay in their primary teeth (1). The National Basic Health Research (Risikesdas) of the Ministry of Health of the Republic of Indonesia conducted in 2018 reported that oral health problems are still common among Indonesians. Five-year-old children have an average of eight damaged teeth, and people over 65 years old have 16 to 17 teeth decayed or extracted due to caries (2). This situation aligns with the results of a study reported by Adyatmaka in 2022 regarding the performance of dentists in Indonesia. Adyatmaka found that 51% of dentists felt less adept at handling paediatric patients, 50% at marketing services, 43% at working with geriatric patients, and 26% at motivating patients (3). Therefore, educational institutions must better prepare dental graduates to be competent in addressing various dental and oral health issues in Indonesia. Competent graduates are expected to handle health problems with various promotive, preventive, and rehabilitative efforts to improve dental health quality in Indonesia.

Preparedness is not just a matter of knowledge and competence but also of confidence and readiness to enter the community of practice outside the relatively protected environment of dental school. Dental graduates are transitioning between post-education at the college stage and a new workplace environment (4). Graduates who are not ready will experience a more difficult transition when faced with actual work environment conditions (5). Preparedness for practice can be measured using several instruments, including the Global Preparedness Score, Dental Undergraduates Preparedness Assessment Scale (DU-PAS), Preparedness for Practice among Dental Graduates-Scale (PPDG-S), and Graduate Preparedness for Practice (GAPP) (6–9). The GAPP instrument was selected because it is seen to be the most thorough in its evaluation, covering both the technical and non-technical aspects needed in the workplace.

Numerous studies on dental graduates' preparedness for practice have been widely reported in various countries. Newly practicing dentists in America exhibit least confidence in managing dental trauma cases, performing invasive treatments on young children under 4 years old, and treating patients with special health care needs (10). In contrast, in the UK, new graduates require further preparation to effectively provide feedback to colleagues in dentistry and other healthcare professions, handle various work situations, manage time, deal with stress, and effectively balance work and personal life (11). Dentists in Indonesia feel inadequate in diagnosing cases of oral cavity cancer, feel unable to treat patients with special needs, feel they are lacking expertise in caring for toddlers and the elderly, and feel they are lacking in clinical management issues (3,12,13). Therefore, dental education institutions need to review the level of practice readiness and expand the educational focus on aspects of technical skills and other elements needed to face actual dental practice conditions.

Numerous factors, such as curriculum design, curriculum content, lecturer abilities, reflection and feedback, assessment procedures, internship opportunities, and work experience can influence preparedness for practice (4,14). Research conducted by Yani et al. found a strong and positive correlation between the learning environment and the readiness for practice among dental graduates (14). The learning environment includes organisational structure and culture, the physical and virtual environment, and the resources available in educational institutions (15). The learning environment for dental education can be measured using several instruments: Dundee Ready Education Environment Measure (DREEM) (16), Clinical Education

Instructional Quality (ClinEd IQ) (17), Dental Student Learning Environment Survey (DSLES) (18) and the initial Dental Clinical Learning Environment Instrument (DECLEI) (19). The DREEM instrument was chosen because it includes more comprehensive questions evaluating the overall learning experience.

There have been limited studies regarding the level of practice preparedness of dental graduates in Indonesia and similar parts of the world. Although research on the relationship between the learning environment and preparedness for practice has been conducted (20), this study covered non-technical aspects such as communication skills, professionalism, and management and leadership as measured by the GAPP instrument. The findings from this study can help to determine the efforts needed to improve the learning environment for dental education. This research aims to bridge this gap by determine the relationship between the learning environment and the preparedness to practice among dentists.

METHOD

Research Design

This study involved quantitative research using a cross-sectional design. A survey was administered to dental graduates from the Faculty of Dentistry, Syiah Kuala University, Aceh, Indonesia, to assess their perceptions on the learning environment and its relationship with preparedness for practice. Data collection was gathered between October to November 2023.

Research Population

The population of this study consisted of dental graduates from the Faculty of Dentistry at Syiah Kuala University. The study included all students who had graduated in the last two years.

Research Instrument

Perception of the Learning Environment

The Dundee Ready Educational Environment Measurement (DREEM) measured the students' perception of their learning environment. DREEM, developed by Roff et al. (1997), has been translated into Indonesian and has a good reliability score with a Cronbach's alpha value of 0.88 (16). This questionnaire consists of 50 statements divided into five subscales: perceptions of learning (12 items), perceptions of teaching (11 items), perceptions of academic achievement (8 items), perceptions of the learning atmosphere (12 items), and perceptions of the social environment (7 items). The questionnaire uses a Likert scale with scores ranging from 0 to 4 (0= strongly disagree and 4= strongly agree for positive statements, and 0= strongly agree and 4= strongly disagree for negative statements). A score of 0–50 indicates an 'impoverished' learning environment, 51–100 indicates 'there are problems', 101–150 indicates 'more positive than negative', and 151–200 means 'excellent' (21).

Perception of Preparedness for Practice

The Graduate Assessment Preparedness for Practice (GAPP) developed by Ray et al. (2016) assessed graduates' perceptions of preparedness for practice. Experts conducted a back-to-

back translation and review process to adapt the questionnaire to the Indonesian context. The GAPP instrument was chosen because it is considered the most comprehensive assessment. It is divided into four domains: clinical skills, professionalism, communication, and management and leadership. This instrument uses a Likert scale of 1- 7 (1 = completely unprepared and 7 = completely prepared) (6). The preparedness for practice is evaluated by the total score of each item, which is then categorized into two groups based on the median value. Scores at or below the median are classified as 'low preparedness for practice,' while scores above the median are classified as 'high preparedness for practice.'

Research Analysis

This study used descriptive statistics as a form of univariate analysis. Validity and reliability tests were performed to confirm the measurement tools' precision and reliability. Furthermore, a normality test was conducted to assess the distribution of the data, which is a prerequisite for performing bivariate analysis. The results of the Kolmogorov-Smirnov test for both DREEM and GAPP scores revealed non-significant p-values (0.053 and 0.139, respectively, $p > 0.05$) and a coefficient of variance below 20%. Based on these results, it can be concluded that the data are normally distributed, allowing for parametric tests, specifically the Pearson test, to be conducted. The correlation between the total DREEM and GAPP scores was examined. This analysis was executed using IBM SPSS version 26 software.

RESULT

Instrument Validation

Validation of the GAPP instrument has been accomplished. The GAPP instrument consists of four aspects: clinical aspects (24 items), professionalism aspects (3 items), communication aspects (4 items), and management and leadership aspects (3 items). Based on expert suggestions for the first aspect, three items were omitted (nos. 10, 20, and 21), two items were broken down into several items (nos. 15 and 22), and the rest were adjusted for grammar and context to fit conditions in Indonesia. The Indonesian version of the GAPP instrument was tested on 30 dentist respondents. The analysis showed that the validity scores of all questionnaire items were valid and had excellent reliability, with a Cronbach alpha value of 0.976.

Respondent Characteristics

The number of respondents who participated in this study was 101 graduates; three were excluded because they did not complete the questionnaire. Most respondents are Acehnese, with an age range of 24–31 years. Most respondents have experience working as dentists and have participated in internship programs (Table 1).

Table 1: Respondent Characteristics

	Variable	f	%	Mean (Standard Deviation)
Gender	Male	17	16,8%	26.31 (1.32)
	Female	84	83,2%	
Age				
Work experience	6 months	16	15.8%	
	6-12 months	43	42,6%	
	> 1 year	42	41,6%	
Internship history	No/not yet internship	48	47,5%	
	Currently on internship	2	2%	
	Have done an internship	51	50,5%	

Perception of the Learning Environment

Graduates' perceptions of the current learning environment are good. This is reflected in the DREEM scores, which showed that the positive aspects outweighed the negative ones, with a score of 148/200 (Table 2).

Table 2: Perception of The Learning Environment

	Mean (Standard Deviation)	Average Score/ Maximum Score	Score (%)	Interpretation
DREEM total		147.9/200	74%	More positive than negative
Students' perceptions of learning	2.97 (0.58)	35.5/48	75%	A more positive perception
Students' perceptions of teachers	2.96 (0.35)	32.5/44	75%	Moving in the right direction
Academic self-perceptions	3.21 (0.21)	25.6/32	81,25%	Feeling more on the positive side
Perceptions of atmosphere	2.85 (0.34)	34.7/48	72,91%	A more positive atmosphere
Social self-perceptions	2.78 (0.4)	19.4/28	67,86%	Not too bad

Perception of Preparedness for Practice

Most respondents had a good level of preparedness for practice in all areas studied, with the highest score in professionalism at 88.32% (Table 3).

Table 3: Perception of Preparedness for Practice

	Mean (Standard Deviation)	Average Score/ Maximum Score	Score (%)	Interpretation
GAPP total		201.23 (22.00)	84.54%	High
Clinical skills	5,86 (0,27)	140.55 (15.62)	83.66%	High
Communication	6,01 (0,14)	18.03 (2.20)	85.80%	High
Professionalism	6,18 (0,05)	24.73 (2.93)	88.32%	High
Management and leadership	5,97 (0,19)	17.91 (2.30)	85.28%	High

Correlation Between Learning Environment and Preparedness for Practice

The analysis showed a significantly weak correlation ($p < 0.001$; $r = 0.365$) between the learning environment and preparedness for practice based on the Pearson correlation test.

DISCUSSION

This research aims to determine the relationship between the learning environment and preparedness for practice in dentistry. The DREEM instrument was used to assess graduates' perceptions of their learning environment, while the GAPP instrument was used to discover graduates' perceptions of their preparedness for practice. The GAPP instrument has been validated and adapted to the dental context in Indonesia, obtaining a Cronbach alpha value of 0.976 for reliability. Research in Australia using the GAPP questionnaire also demonstrated high reliability, with Cronbach's alpha ranging from 0.79 to 0.96 (22).

Graduates' perceptions of their learning environment indicated it is 'more positive than negative'. This shows that, overall, graduates feel satisfied with their learning experience. Even though the overall score was better, we believe specific areas still need attention, and identifying these could enhance the curriculum in the future. Academic self-perception was perceived as the most positive among all the domains. The academic self-perception is central to the DREEM as it reflects students' confidence in their academic progress. Notably, students whose primary career choice was dentistry scored significantly higher in academic self-perception than those with other career preferences. Many studies report that career preferences strongly influence students' academic performance, motivation, and well-being (23).

The domain with the lowest scores was social self-perception. Social self-perception can serve as a general indicator of overall well-being and may reflect how factors like long clinical hours and scheduling affect students' self-perception. The lower score in this area suggests that improving the curriculum is necessary by incorporating teaching methods that promote active student involvement while fostering a supportive environment and a strong social support network for students.

The research revealed that dental graduates felt well-prepared in various aspects, including clinical skills, communication, professionalism, and management and leadership. However, graduates reported needing more mastery in specific clinical skills, such as orthodontic case management, multiple root endodontic treatment, odontectomy, and indirect restoration. This lack of preparedness for practice might be attributed to insufficient exposure to these clinical cases during their education. For instance, a study in Pakistan found that 61% of final-year students and new dental graduates needed more mastery of multiple root endodontic treatment (24). Similarly, Malaysian dental graduates struggled with orthodontic treatments due to limited case exposure. This condition occurs because there are limited cases suitable for undergraduate students. This issue can be addressed through practical training simulations using models and e-learning (20).

The analysis found a statistically significant but weak correlation ($p < 0.001$; $r = 0.365$) between the learning environment and dentists' preparedness for practice. Potential reasons for this weak correlation could include the complex, multifactorial nature of preparedness for practice, which involves variables beyond just the learning environment. Multiple factors, including the learning environment, educational factors, individual characteristics, internship experience, and work experience can influence preparedness (4,14).

The learning environment is crucial in enhancing student motivation, mainly through fostering a sense of belonging (25). A positive learning environment helps students feel part of their surroundings, increasing their motivation and responsibility for learning (26). Consequently, student success in learning impacts their preparedness for practice. An individual's personal qualities and mindset also significantly shape their perceptions of preparedness for practice. Among these qualities, self-efficacy is particularly important. Self-efficacy refers to an individual's conviction in their capacity to effectively organise, execute, and complete various learning tasks. This belief influences how they approach challenges, persist through difficulties, and evaluate their preparedness for practice (27). High self-efficacy often leads to more proactive and confident behaviour in academic and professional settings. Individuals with strong self-efficacy tend to set ambitious goals, exert greater effort, and use effective strategies to overcome obstacles. This enhanced engagement and perseverance generally result in better academic performance and a more positive assessment of their preparedness for professional tasks (28).

The preparedness for practice in performing assessments and managing simple orthodontic care (such as removable orthodontic treatment), double-root endodontic treatment, odontectomy, and indirect restorations needs improvement. The learning environment also requires enhancement in several areas, including learning innovations, the relationship between faculty and students, and support for students facing academic and non-academic challenges. Improving these aspects is crucial for enhancing graduates' preparedness for practice. A curriculum incorporating innovative teaching methods can engage students more effectively while fostering strong faculty-student relationships and encouraging mentorship and guidance (29,30). Additionally, providing robust support systems for students dealing with academic pressures or personal issues helps them focus on their studies and develop resilience (23). Together, these improvements will equip graduates with the skills and confidence necessary to transition successfully into professional dental practice.

This research has an excellent response rate (100%) and validated the GAPP instrument for the Indonesian dental context. The respondents who participated in the study were graduates of the last two years, with the assumption that they had experienced a learning environment close to current conditions. However, the study also has limitations, such as not measuring the

learning environment and practice preparedness directly at the time of graduation, possibly weakening the correlation strength. Graduates might need help to recall their educational learning environment accurately. The research did not explore other factors that could affect dental graduates' practice preparedness. Further studies could examine the level of readiness as a whole to improve other factors that affect the preparedness of dentists in Indonesia.

CONCLUSION

Dental graduates' perceptions of their learning environment were 'more positive than negative'. The majority of new dentists demonstrated a high level of preparedness for practice. Statistically, there is a relationship between the learning environment and preparedness for practice among new dentists. The results of this research can help institutions improve and optimise the learning environment and enhance graduate preparedness for practice. Further research can explore other factors influencing graduates' preparedness for practice.

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ETHICAL APPROVAL

The research proposal was approved by the Ethics Committee of the Faculty of Dentistry, Syiah Kuala University, on October 24, 2023 (No 475/KE/FKG/2023).

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